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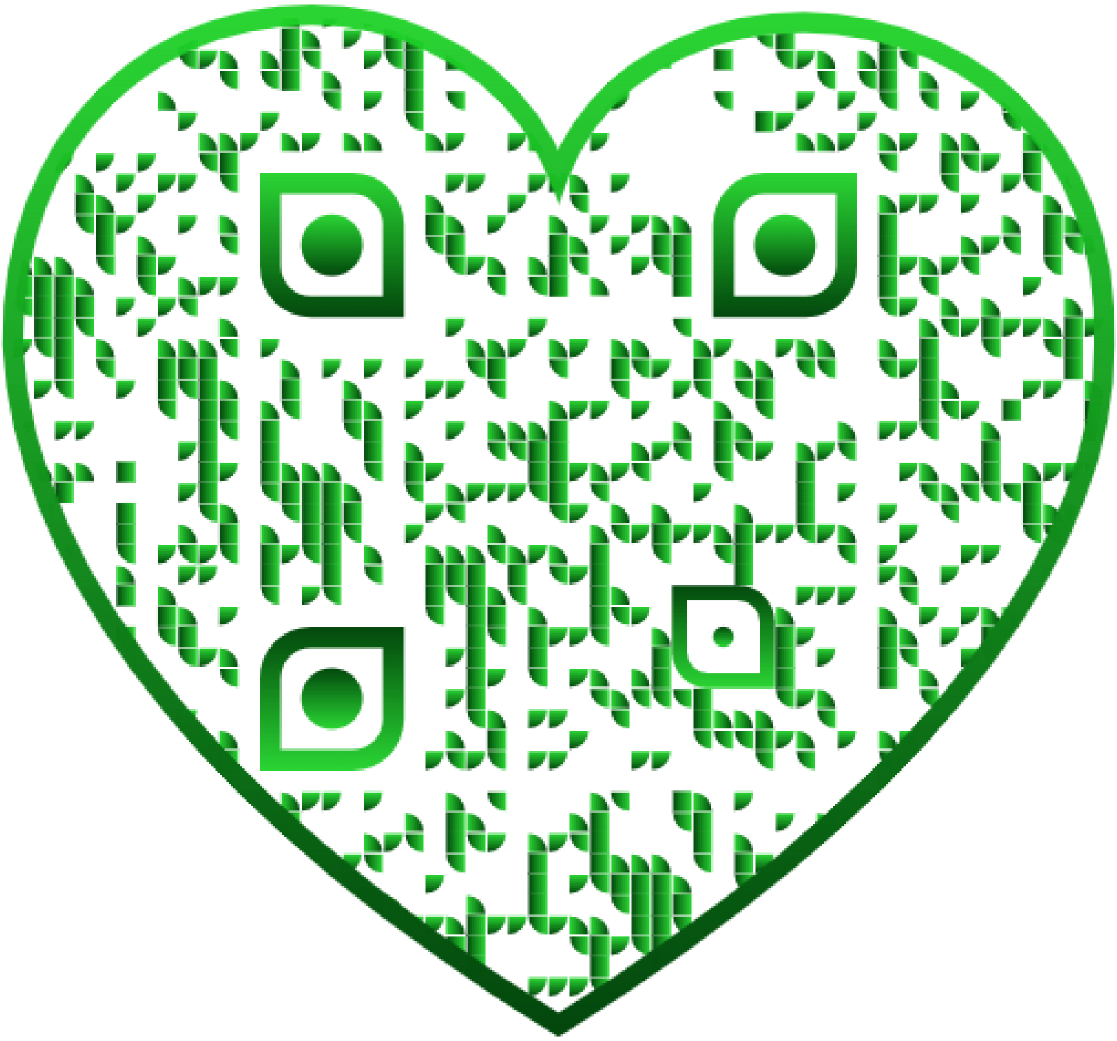

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editor'sletter

15th Annual Working in a Small Shop Issue

rbrown@canadianwoodworking.com

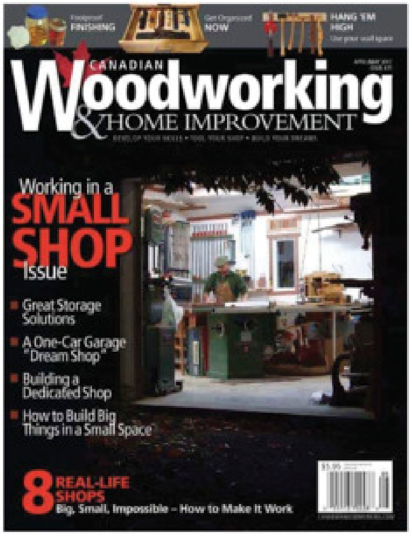
When I put together our first "Working in a Small Shop" issue back in 2011, I was under the impression it would be a one-time thing. We're now publishing our 15th small shop issue which means we've offered about 200 articles on this theme over the years. We've covered topics ranging from how to organize and tool your small shop, to how to build a shop to be proud of. We've also featured profiles of about a dozen small Canadian workshops to give you an idea of what other woodworkers have done with their little slice of heaven.

This is a theme that will live on for generations. Spacious workshops make for gorgeous, envy-inducing magazine covers, but don't do much to solve real-life workshop challenges. Every cubic foot of space needs to be considered when you're trying to make the most of a corner of a basement or a condo closet. And if you think I'm joking about working wood in a condo closet, check out our June/July 2015 issue, where Roger Adams takes you through his cozy workshop. It's a walk-in closet, mind you, but it's still pretty amazing to see what he accomplished with a small space and a heavy dose of determination.

In this issue you'll also find articles on router tables and sawhorses, not to mention shop jigs, fixtures and techniques that will improve your efficiency and accuracy. One of the topics I'm currently most passionate about is spray finishing. I've been using spray finishing equipment for years, and once you learn a few of the basics, you'll be applying finishes smoothly and effortlessly in no time at all. If you think spray finishing is only for production workshops, think again. And to learn how to build a collapsible spray booth and read about how to select the best HVLP spray system for your situation, visit our website and read some of our previous articles.

Whatever size your workshop is, we can offer useful ideas and suggestions. Your space might be tiny, but our determination to help is mighty. Enjoy your shop time, wherever you're working.

— Rob Brown, Editor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Working in a SMALL SHOP Issue
Great Storage Solutions
A One-Car Garage "Dream Shop"
Building a Dedicated Shop
How to Build Big Things in a Small Space
8 REAL-LIFE SHOPS
Big, Small, Impossible – How to Make It Work

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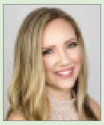

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BESSEY
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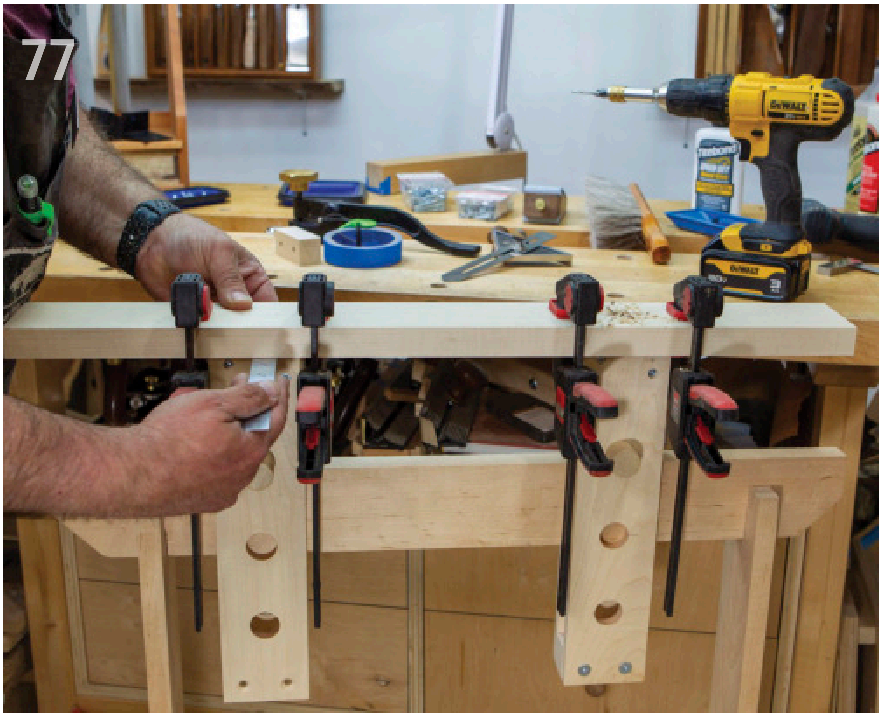

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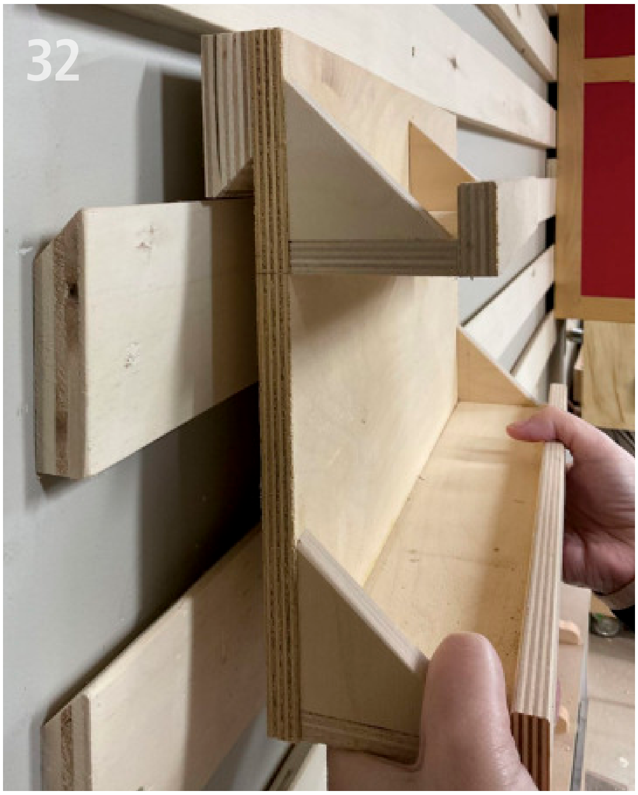

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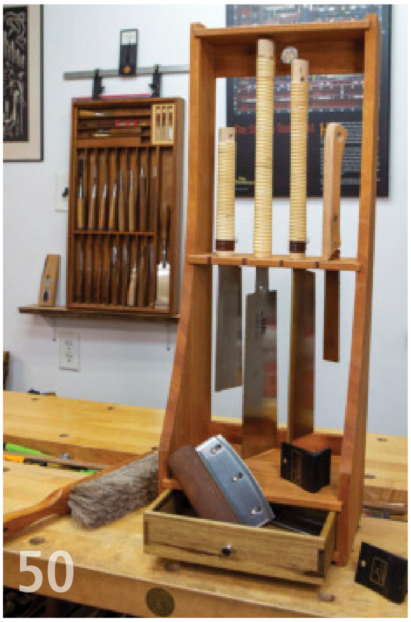

COVER STORY

Cover photo by Steven Der-Garabedian

50 **Build a Saw Stand**
Organize and protect your prized hand saws with this beautiful stand.
BY STEVEN DER-GARABEDIAN

letters

Small shop spray booth

I just became a member of *Canadian Woodworking & Home Improvement Magazine* and am very impressed with the great resources for anyone working in a small shop. My shop is about 250 sq.ft. so I need to be as smart and compact as possible. I just finished making a spray booth, but since I had a lot of large cardboard saved, I substituted it for the insulation panels. It works great, and is very easy to install and dismantle.

I also noticed plans for both a knock-down finishing rack and an auxiliary drill press table. Both of those projects look like they would further streamline my work in the shop. Thankfully, summer is just around the corner and I'll have some time to complete these projects. I'm sure there are going to be many others, as I explore your back catalogue of articles in the coming weeks. Keep up the great work!

Steve J.
Via email

Hi Steve,
I'm glad to hear a new subscriber like yourself is enjoying the small shop projects. I'm confident you'll find a lot of other great shop projects on our website, once you start digging. Great idea to use cardboard for the panels of the finishing rack. I also save large sections of cardboard whenever I get my hands on them. I built that finishing rack about 10 years ago, and every time I use it, it saves the day. Having freshly finished workpieces scattered around the shop is a recipe for disaster. This rack solves that problem, then knocks down and stores in a small space until I need it again.

Enjoy your time in the shop this summer.
— Rob Brown, Editor

A workbench finish?

What is the best finish for a workbench? And I'm not sure when I'll be making the project; how does temperature affect applying the finish? I'm working in an unheated garage in the Greater Toronto Area.

Paul D'Agostino
Via email

Hi Paul,
I don't think there is one "best" finish for a workbench. Everyone has their preferences.

When I finished my workbench about 15 years ago, I used a mixture of about half oil-based polyurethane and half penetrating oil (tung, linseed, etc.). I might have added a small amount of paint thinner to it, too, to thin the finish and allow it to sink into the wood a bit more. I probably applied two to three coats.

There's no need for a heavy film finish, as that creates a smoother top with less friction. Nobody wants a workpiece sliding around their bench as they work on it.

The finish doesn't need to be perfect. Something to protect the top from glue and stains is nice, but it will get beaten up in no time. The first few scratches and dents will be the hardest to handle, but after that, each additional ding won't be as painful. If it's solid wood, you'll probably want to flatten it with a large hand plane from time to time, then reapply a few new coats of finish.

In terms of how weather affects a curing finish, start by reading the manufacturer's guidelines. Generally speaking, I'd wait until the temperature gets up to double digits. If humidity is very high, you might want to hold off on applying the finish until it drops a bit. Each coat of an oil-based mixture, such as the one I used, should dry for at least a day before lightly sanding it and applying another coat. If there is even the tiniest amount of stickiness to the previous coat, wait until that's completely gone before proceeding. If you get bits of finish sticking to the sandpaper while sanding between coats, wait longer before applying the next coat. Colder weather slows the cure time. If you apply a finish when it's too cold, it might never cure properly. Sunlight and airflow speed the cure time.

Good luck and enjoy making your bench.
— Rob Brown, Editor

Fun foot stool build

I managed to get the foot stool ("Build an Upholstered Foot Stool," Apr/May 2012) all finished, so I've attached a couple of photos for you. It was a fun build and I thoroughly enjoyed it. All done in my shed in Inverness, Scotland.

I hope it's up to spec!

Jonathan
Via email

Hi Jonathan,
It looks great! It also looks very comfortable. Never has it been more appropriate to put your feet up and enjoy a project. Thanks for sharing it with us.— Rob Brown, Editor

shopnotes

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Tool Reviews

Festool SYS-AIR HEPA air filter

An excellent choice for anyone seeking an advanced, highly portable air filtration solution.

Woodpeckers folding saddle squares

The quickest and easiest way to mark perfectly aligned lines across adjacent surfaces.

Milescraft DrillMatePRO

An economical way to drill straight or angled holes precisely.

View these reviews and more at:
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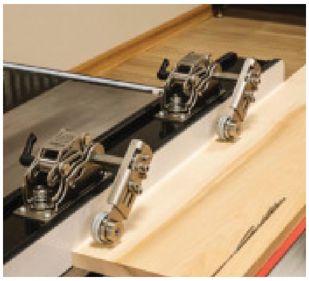
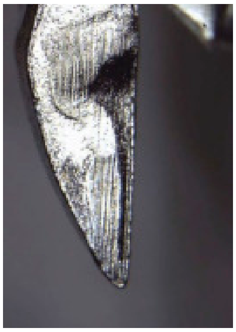
Clear-Cut STS stock guides



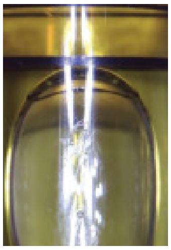
These guides hold workpieces firmly against the fence while feeding them through a table saw or router table, ensuring consistent pressure and improved safety. The angled wheels are designed to pull stock both toward the table and toward the fence, keeping it tight and flat. The one-way roller mechanism only allows movement in the feed direction, which helps prevent the stock from being thrown back toward the user. Consistent pressure reduces chatter and ensures smoother, cleaner cuts.
Jessem.ca



Micro Mystery

Can you guess this object commonly found in most shops?

Follow us on Facebook (Facebook.com/canwoodworking) and Instagram (@canadianwoodworking) to see more Micro Mystery challenges.



Previous issue:
The bubble in a spirit level

Canadian Social Media Influencers

Here's a mix of informative and entertaining social media influencers to check out.

Steven Der-Garabedian
Instagram: @blackwalnutstudio
High-quality furniture and veneer work from a woodworking educator and writer

Dorota Plowiec
Instagram: @extreme.furniture.makeover
Sharing furniture refinishing techniques and tips

Marty Schlosser
Instagram: @apexwoodworks
Furniture making with a hybrid approach

Brian Heidinger
Instagram: @august.dawn.co
An energetic and eclectic look into a hobby woodworker's world

Events

Wonders of Wood – Niagara
Woodcarvers Association's 42nd show and competition
Niagara-on-the-Lake Community Centre, Niagara-on-the-Lake, Ontario
November 7 and 8, 2025
NiagaraWoodcarvers.com

Video Links

canadianwoodworking.com/**videos**

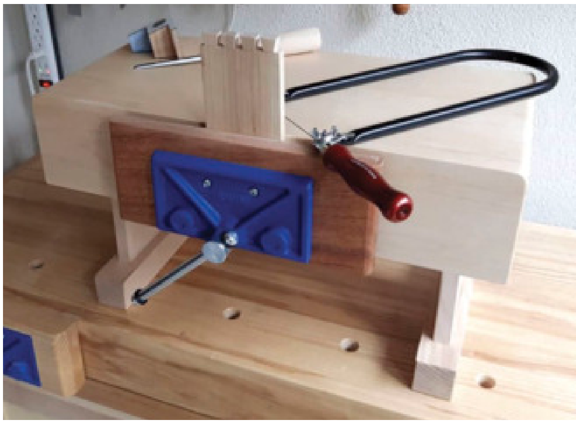
Canadian Quotes – Adam Bezzina

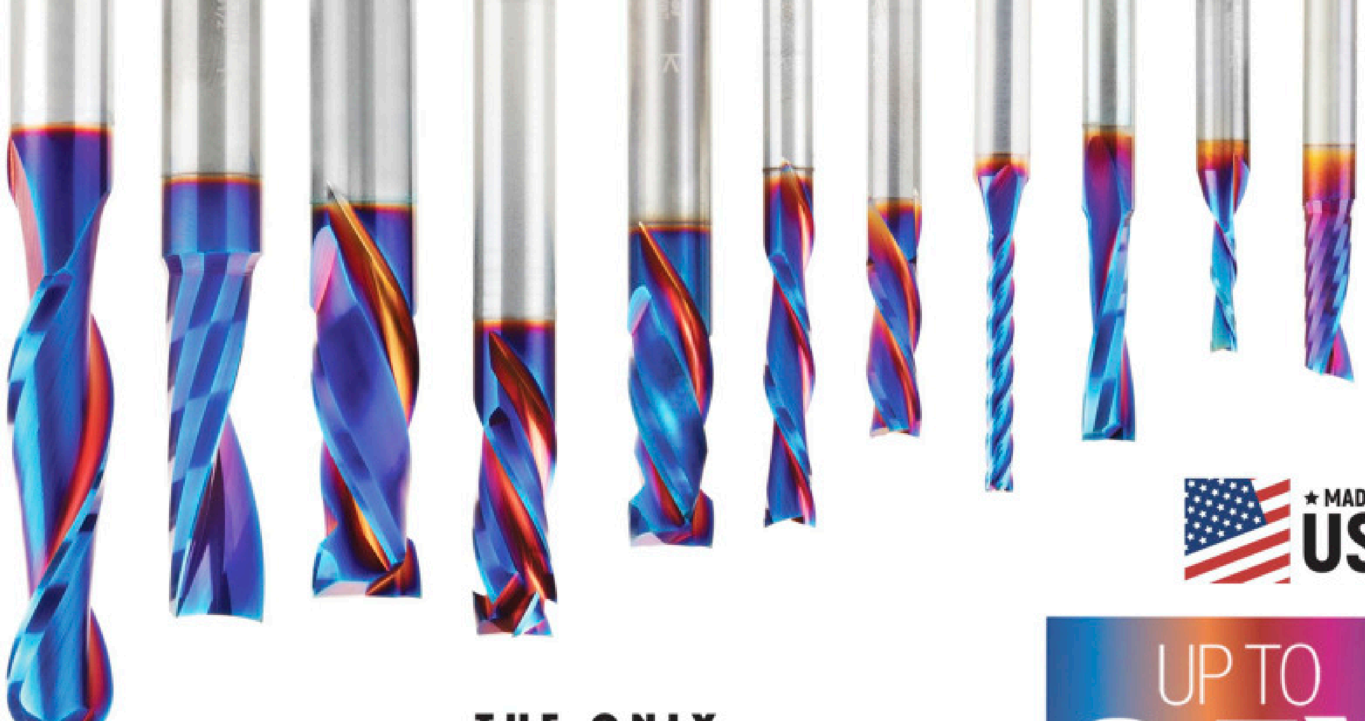
10 More Tips to Get You Started with Spray Finishing

Free Plan

Build a Bench-on-Bench

This versatile, handy workbench addition, found in the Free Plans section on our website, will bring your hand work up close for increased accuracy and comfort.





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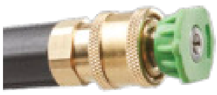

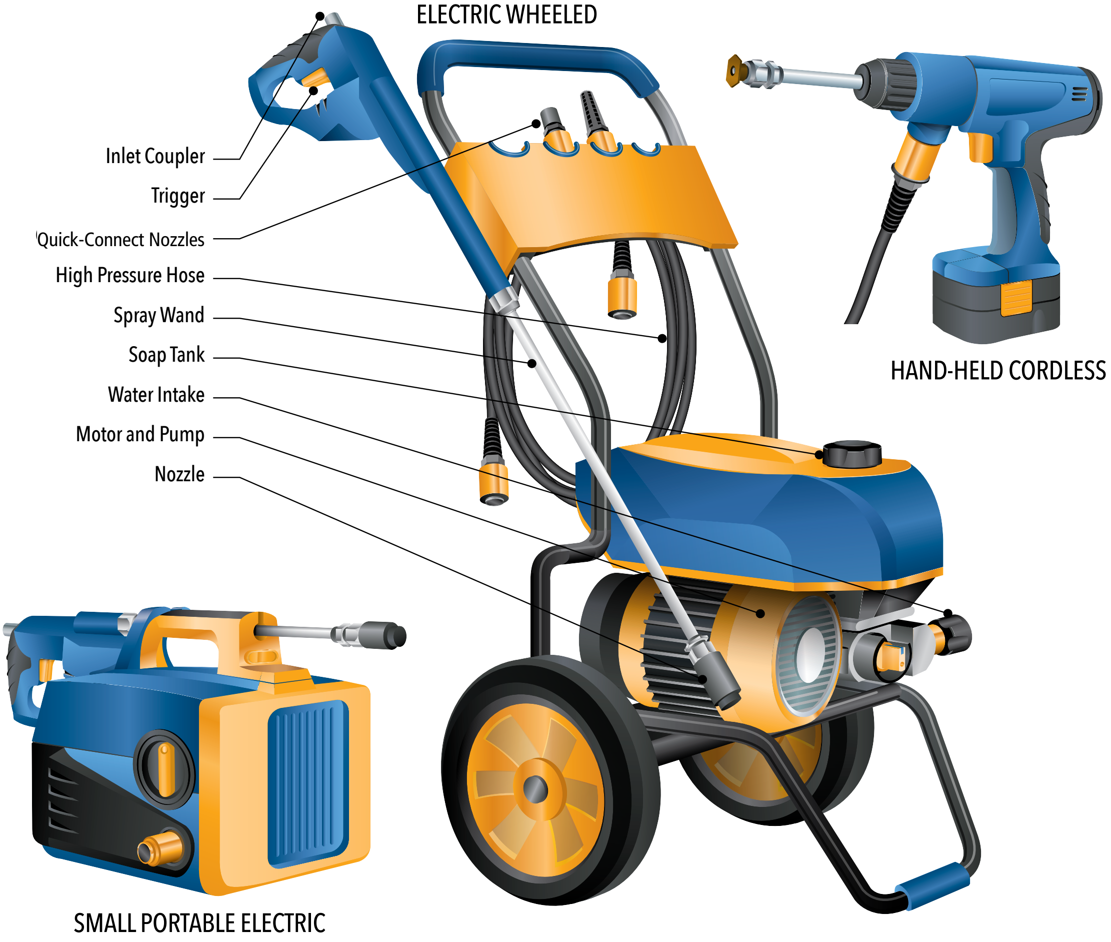

A pressure washer (PW) pumps water at high pressure through a hose and nozzle to clean various hard surfaces. Consumer PWs come in a variety of sizes and can be had as cordless, electric and gas models. They're rated by the water pressure they deliver, measured in pounds per square inch (PSI). **Gas-powered PWs** deliver between 2,500 and 4,000+ PSI, making them ideal for cleaning concrete, stripping paint and tackling large surfaces. However, they're heavy and noisy. **Electric PWs** are lighter and quieter, typically delivering between 1,500 and 2,500 PSI. They're well-suited for a range of domestic cleaning jobs including decks, driveways, siding and vehicles. **Battery-powered PWs** are more portable and convenient, usually delivering under 1,000 PSI. They're best for cleaning cars and patio furniture and accomplishing other small household tasks. A fully charged battery typically lasts 15 to 40 minutes, depending on the battery amp-hour rating and the washer's PSI setting. In addition to water pressure, PWs are rated by water flow, measured in gallons per minute (GPM). A higher GPM allows a PW to clean a larger surface area more quickly and efficiently. Some PWs feature quick-connect nozzles that provide different spray patterns, while others come with turbo nozzles for increased cleaning power. Certain models can draw water from a bucket or other water source, while others require a hose connection. Many models feature onboard detergent tanks to enhance cleaning power.

Power source: gas, corded (120 AC), battery (18V – 60V)

PSI range: under 2,000 (light-duty); up to 3,000 (medium-duty); over 3,000 (heavy-duty)

GMP range: under 2.0 (light-duty); 2.0 to 2.5 (medium-duty); over 2.5 (heavy-duty)

Get the Most Out of Your Power Washer

Safety first

Because the water pressure is very high, PWs can cause serious injury. Wear safety goggles, closed-toe shoes or boots, and ear protection, especially with gas-powered models. Keep people and pets away from the work area and avoid spraying electrical outlets or wiring.

Choose the right nozzle

Nozzles are colour-coded to indicate spray patterns. Use the appropriate nozzle for the task — a wide spray is good for general cleaning, while a narrow spray is for tough stains.

Take the time to test

Test the spray on an inconspicuous area to ensure you don't damage the surface. Start with a wider spray nozzle and low pressure and increase as needed. For tough stains, apply a cleaning solution and let it soak before spraying.

Spray like a pro

For best results hold the nozzle at an angle to the surface and use smooth, overlapping strokes. Generally, you'll want to work from top to bottom to prevent streaks. When applying detergents, apply from the bottom up, and rinse from the top down.

Maintain your investment

Clean the nozzles regularly to prevent clogs and follow the manufacturer's instructions for regular maintenance.

Photos by Rob Brown Illustration by Len Churchill

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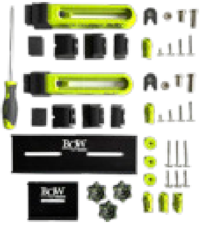

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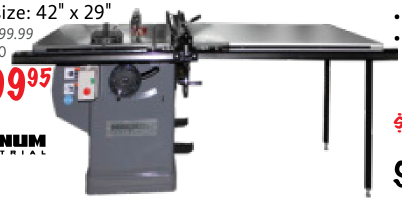

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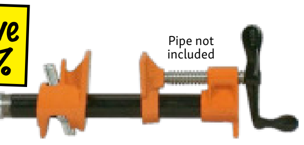

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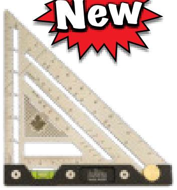

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Top 10 Spray Finishing Tips

Spray finishing can seem confusing, but with these tips you'll realize how beneficial and enjoyable this approach can be.

BY ROB BROWN

1 Protect Yourself and the Area – Use PPE (especially respirators) with spray equipment. If you're spraying solvent-based finishes you also have to consider using fans, heaters and other electric devices that are explosion-proof. You might also want to cover up large machine surfaces (cardboard, thin sheet goods and blankets all work well) so they don't get covered with overspray. A simple spray booth will go a long way in keeping overspray down.

2 Stick with Water-Based – Not only will water-based finishes dry faster and be easier to clean up, they're less dangerous to the human body and aren't an explosion risk.

3 Clean Your Shop First – Dust is the enemy of any finish, but this is especially true when spraying a finish. A thorough cleaning of the shop, including blowing many things off, will keep the dust down while spraying.

4 Have a Surface, a Lazy Susan and Some Supports – A stand or surface of some sort works nicely for holding work while it's being finished. Making and using simple work supports to keep your work off the work surface will help you apply a finish on the edges of a workpiece.

5 Learn How It Works – A spray gun has a number of knobs and dials on it. It looks confusing, but a bit of knowledge will allow you to control variables like fluid rate and fan pattern so you can apply the right amount of finishing material to the right location.

6 Practice Makes Perfect – Practicing on cardboard, wood finish panels and old pieces of furniture will allow you to refine your technique and get used to how the spray system works.

7 Less Is Usually More – A nice middle ground is what you're aiming for, but it's best to err on the side of applying less finishing material per coat, rather than more, especially while you're learning.

8 Be Patient – If you mess something up it's usually best to let the finish dry before trying to fix it. Sags and runs can often be scraped off with a sharp blade or scraper. Trying to do so when it's wet usually leads to bigger problems.

9 Clean Up Promptly – Leaving finish material to dry inside a spray gun makes spray finishing frustrating. If you're using a water-based finish, a quick rinse, followed by spraying water through the system, followed by another rinse and scrub is usually enough to keep your gun and cup working (and looking) wonderful for years.

10 Not Everything Needs to be Sprayed – Even though you have this great new piece of finishing equipment, you don't necessarily need to use it for every project. Sometimes a penetrating oil finish or wiping on a light coat of shellac is all that's needed.

ROB BROWN
rbrown@canadianwoodworking.com

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VIDEOS: 10 More Tips on How to Spray on a Finish, Parts of a Spray Gun

Photo by Rob Brown

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What’s the Difference?

Woodworking tools, terms and techniques can sometimes be confusing. Here, we help you make sense of the finer points of woodworking so you can make the right decision for your situation.

BY CARL DUGUAY

Pores and grain

Wood pores and wood grain are two distinct characteristics of wood that define its structure, texture and appearance.

Wood pores, also called vessels, are remnants of the tree’s vascular system. These tiny channels transported water and nutrients from the roots to the leaves during the tree’s life. Pores are most visible on the end grain of hardwoods, appearing as small round or elongated openings. Their size, distribution and arrangement vary between species and have a significant impact on a wood’s texture and workability. Woods with large pores, such as oak and ash, often referred to as open-pored or ring-porous woods, may require filling to achieve a smooth finish. Diffuse-porous woods, like maple and chestnut, have pores that are relatively uniform in size and distribution. In contrast, softwoods lack pores entirely, as they rely on tracheids instead of vessels for water conduction, giving them a different textural quality.

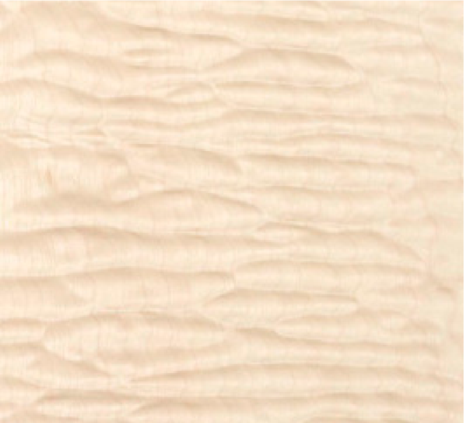
Wood grain, often referred to as the figure or grain pattern, describes the alignment, pattern and texture of wood fibres. It is a key contributor to the aesthetic appeal of wood and gives it its distinctive character. The grain is shaped by the growth rings, the arrangement of wood cells and the method used to cut the lumber. Grain patterns can be straight, wavy or interlocked, and the variation in these patterns can be dramatic, even within the same species. Grain direction also affects a wood’s strength and stability, with some grain types being more prone to splitting or warping. Different sawing techniques, such as quarter-sawn, rift-sawn and flat-sawn, highlight unique grain patterns, each adding its own character to the finished piece.

Understanding the nuances of wood pores and grain can help in selecting and working with wood, whether the goal is structural integrity, ease of finishing or enhancing visual appeal.

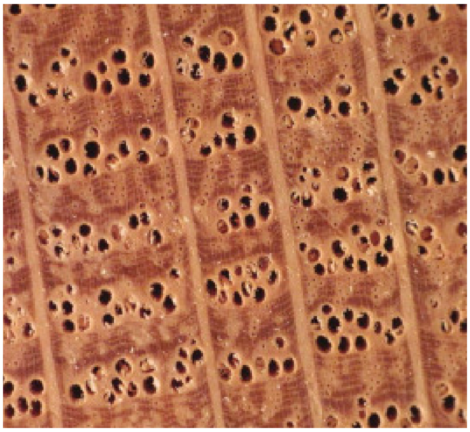
Rasps, files and rifflers

Rasps, files and rifflers are essential hand tools for shaping and smoothing wood, each with unique construction and uses.

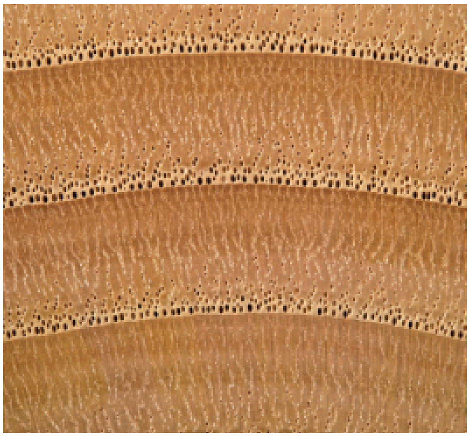
A **rasp** has individually raised, coarse, cone-shaped teeth, making it the most aggressive of the three, designed to remove material quickly. It leaves a surface that’s



Grain in Quilted Maple – We’ve all seen the grain patterns in different wood species. The grain is one of the most striking visual parts of wood. Some species have straight grain, while others, like this quilted maple, have more pronounced grain.

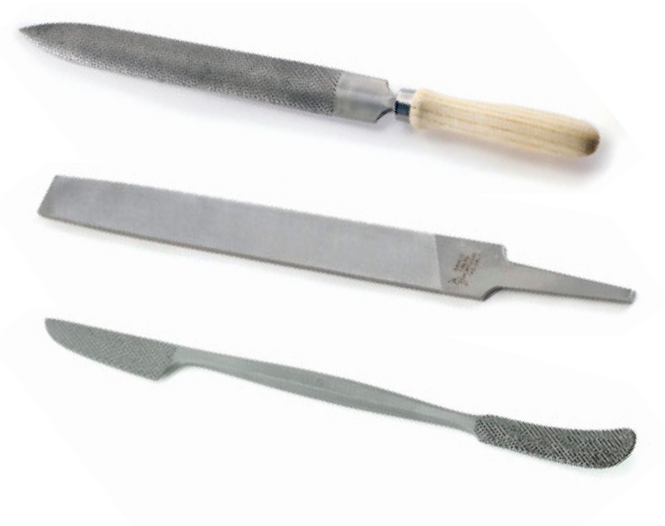


Pores in Red Oak – Though this image is of the end grain of oak, the larger, open pores in this ring-porous wood also show up very clearly on the face grain of oak. Pores are remnants of a tree’s vascular system when the tree was growing.

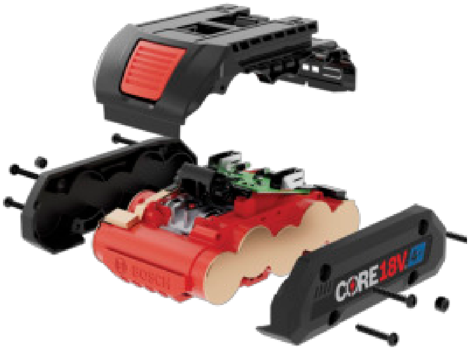


Pores in Chestnut – Here, chestnut has smaller open pores than red oak, which is part of what causes chestnut and red oak to have different looks and characteristics from a woodworking perspective.

Illustrations by Len Churchill



Rasps, Files and Rifflers – Rasps (top) and files (centre) usually have about the same size cutting surface, but rasps cut more aggressively than files. Files typically don't get used on wood, as they tend to clog when used on wood. Rifflers (bottom) have a shorter, curved cutting length and vary in how aggressive they cut. (Photos by Lee Valley)



Voltage – As you can see here, this 18V pack has five individual cells, each with a nominal voltage of 3.6V. (Photo by Bosch)

rougher compared to that left by a file. Rasps are available in various shapes, sizes and coarseness grades, such as flat, half-round and round. Cabinet rasps have a fine-tooth pattern, wood rasps have coarser teeth and four-in-one (also called four-in-hand) rasps have different teeth patterns and shapes on each side.

A **file**, on the other hand, has low, tightly spaced rows of teeth cut into its surface. Straight-cut (also called single-cut) files have parallel rows of teeth, while cross-cut (also called double-cut) files have rows running at opposing angles, delivering a more aggressive cut. Although a file can be used on wood for more precise shaping and smoothing, it's typically used on metal, plastic laminate and wood iron-on edge tape since the teeth tend to clog quickly with wood fibres. Like rasps, files come in various shapes and sizes, including flat, round, half-round, triangular and square.

A **riffler** has variously shaped cutting surfaces on both ends with a handle in the middle. File-cut rifflers have long lines of teeth, while rasp-cut rifflers have pointy teeth. While rasps and files typically have straight, flat cutting faces, rifflers usually have curved cutting faces. They're primarily used for shaping concave and convex surfaces. There are eight traditional styles available in different lengths, proportional to the coarseness of the cutting surfaces.

Voltage, amp-hour and watt-hour

Battery-powered tools typically use one of three battery pack types: 12V (found in compact tools with low power demands); 18V (the standard for most power tools); and 36V or higher (designed for high-demand outdoor tools like gardening and landscaping equipment).

All battery packs are made up of individual cells, each with a **voltage** (V), often called "nominal voltage", of 3.6V. These cells are wired in series to create the required voltage — the electrical potential or power output. A 12V pack has three cells, and an 18V pack has five cells.

Battery capacity is measured in two key ways:

Amp-Hour (Ah) indicates the battery's storage capacity or runtime. It's comparable to a car's gas tank size — a larger Ah means more stored energy and longer operation before recharging. However, runtime varies depending on the tool's workload and operating environment.

Watt-Hour (Wh) represents the total energy the battery can deliver and is comparable to the total distance a car can travel. Wh is calculated by multiplying voltage (V) by amp-hour (Ah). For example, an 18V battery with an 8.0 Ah rating provides 144 Wh of energy (18 × 8 = 144), while an 18V battery with a 6.0 Ah rating delivers 108 Wh (18 × 6 = 108). A battery with a higher Wh rating will last longer than one with a lower rating, assuming the tool's power consumption remains the same.

Understanding these ratings helps you choose the right battery for your tools, balancing power needs and runtime.

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CanadianQuotes

Adam Bezzina

…on design, live edge dining tables and making pieces others aren't sure they can make.

BY ROB BROWN

Whiskey Cabinet – This cabinet was designed for the Interior Design Show in Toronto. With this piece, Bezzina wanted to showcase how far a design could be taken using solid wood construction, a curved door, wood texturing, a solid natural quartzite top and an integrated electrical lift with lighting. Bezzina designed it with one main challenge in mind: "If I wanted the best whiskey cabinet money could buy, what features would I want?" By far the hardest part was creating the solid wood curved doors, he says. Normally creating a solid wood curved piece is easy, but ensuring the interior radius matched up to the radius on the cabinet was not an easy task.

How long have you been building furniture?
About 6 years.

What sort of furniture do you specialize in?
Everything I do is custom, one-of-a-kind, to meet a client's requirements. Something we've become known for is building pieces others weren't sure they could make.

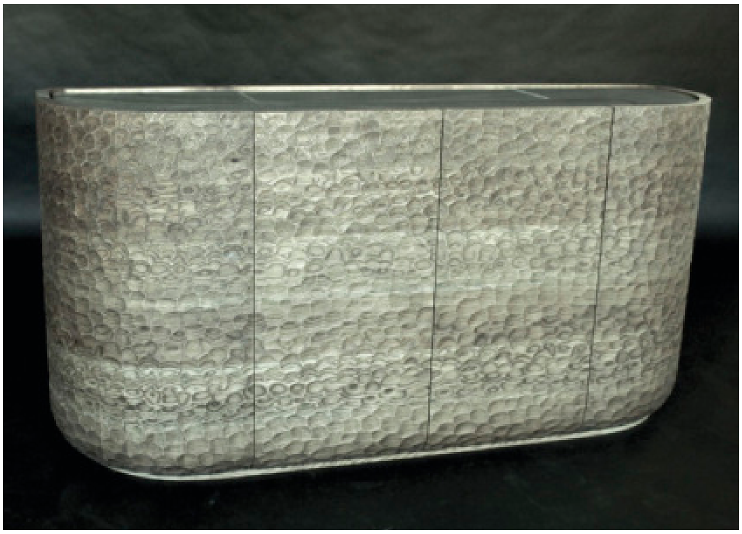
Solid wood or veneer?
Solid wood! We want our pieces to stand the test of time. If we do need to use veneer, we often make our own that is about 3mm thick.

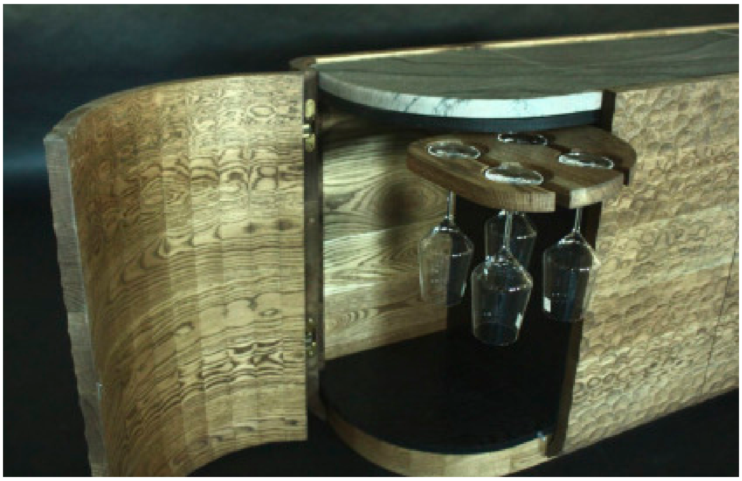
Inherited Vintage Stanley Sweetheart or fresh-out-of-the-box Veritas?
I have a couple inherited Stanley's from my grandfather, the rest are all new.

Flowing curves or geometric shapes?
Flowing curves.

Favourite wood?
Too hard to pick.

Least favourite wood?
Maple.





Photos by Adam Bezzina

Adam Bezzina, 34, Pompous Fox Wood Company Inc.

pompousfoxwoodco.com

Location and size of studio — Barrie, Ontario. About 1,800 square feet

Education — Bachelor's of Mechanical and Materials Engineering from University of Western Ontario

quotes

Our shop is located in a small industrial building on the outskirts of Barrie. As much as I love working with hand tools, the shop has been set up for efficiency. Some of my big investments are my 5' × 8' CNC and 10' sliding table saw. I now have one-full time worker with me, and we usually have a co-op student helping us as well.

* * *

I'm pretty particular about the shop. Everything goes away when we're done using it and we spend 15 minutes or more at the end of each day cleaning up so the shop is ready for the next day.

* * *

When I get a chance to design a piece, it generally starts in my notebook roughing out some ideas. Once a general idea has been put together, I put my engineering background to use and I get on my computer and create a 3D model.

* * *

I'm tired of seeing live edge dining tables. I think they have their place but I'm not very fond of them. To me, they don't offer much of a challenge or creativity, as generally the table bases are very basic as well. I also can't stand using epoxy with them – it's just more plastic entering this world that isn't needed.

* * *

So many people base furniture prices off of what they see on Wayfair but don't understand the difference between something that's mass produced using cheap materials and something that's custom made. I do my best to educate people on this by sharing the process. People say it's expensive but I believe the best word is costly. It costs a lot to produce a high-quality custom piece of furniture.

* * *

For the most part, I look at furniture makers overseas for inspiration: Joseph Walsh, Nick Pedullà and Morten Stenbæk to name a few.

* * *

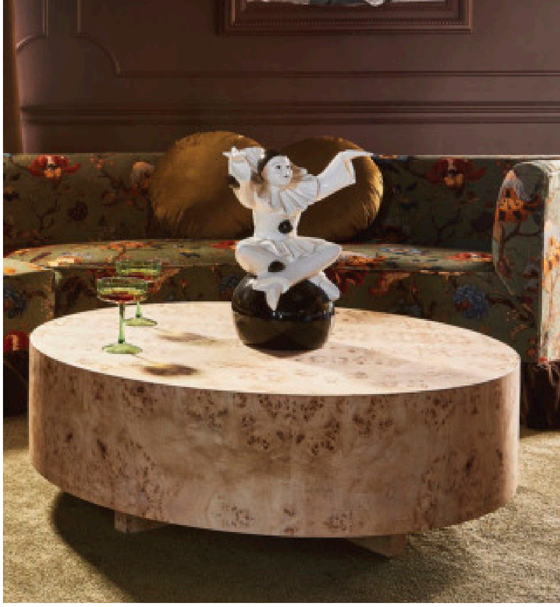
I grew up helping my grandfather in his shop and always enjoyed woodworking. When I bought my first house, I wanted some proper furniture – no more of this particleboard furniture that's terrible for our planet. I started to build my own furniture with the goal of making pieces that last and are good for our planet. That little hobby grew into a passion and allowed me to leave my engineering career.

* * *

Being creative is what brings me joy in my work. Whether I'm designing a piece myself or get to solve creative problems with a design I've been asked to make, creativity is the foundation of our work.

* * *

It has to be functional but beautiful at the same time. For me, form doesn't follow function, they must work together to create a functional piece of art.



Mappa Burl Coffee Table – This piece was made for Hotel Julie, a small boutique hotel in Stratford, Ont. The piece has an MDF skeleton with mappa burl veneer on its outer face. According to Bezzina, sourcing good mappa burl veneer may have been the hardest part of making this piece. (Photo by Lauren Miller)

Whatever the most challenging part is – that's my favourite. Whether I have to figure out a unique design challenge or the design requires a challenging aspect in fabrication, solving the problem and making it happen is the best feeling.

* * *

I'm very proud of a whiskey credenza I designed and built. I think I had over 40 design iterations until I was totally happy with it. It combined so many unique features into one piece of furniture. It's completely solid wood, including the curved doors, hand-carved Naguri texture around the entire exterior, a natural stone top, a unique swivel wine glass storage system and an integrated hidden lift with back lighting. It was a piece I designed for an interior design show to showcase the endless possibilities with custom furniture. It includes the use of textures and other materials like stone, the integration of electronics and lighting, and unique solutions for storage. Not only was it very challenging creating a refined piece, but the fabrication offered some extremely challenging aspects as well and culminated in over 100 hours of labour.

ROB BROWN
rbrown@
canadianwoodworking.com

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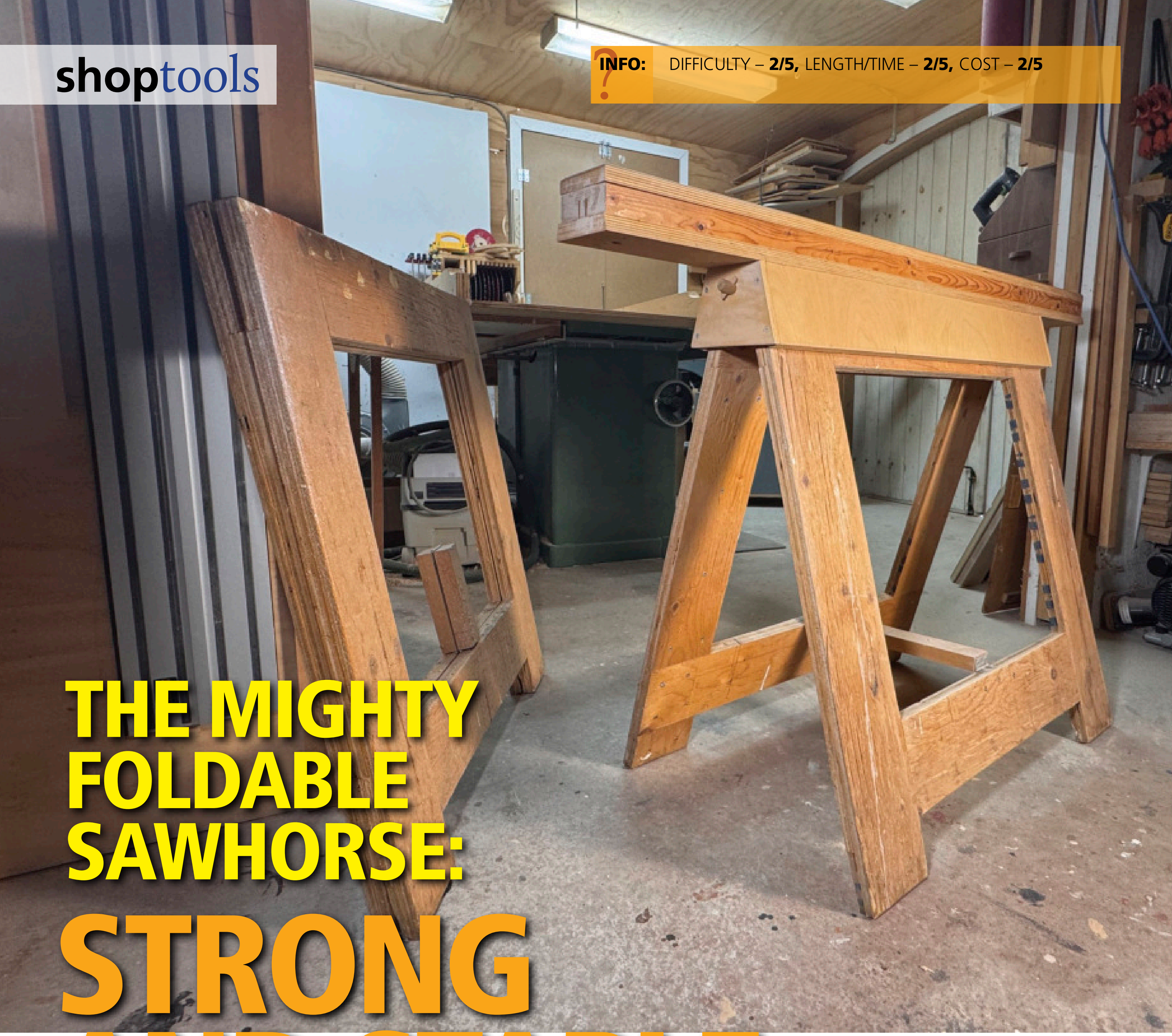
VIDEOS: To see a slideshow of Bezzina's work visit our website.

INFO: DIFFICULTY – **2/5,** LENGTH/TIME – **2/5,** COST – **2/5**



THE MIGHTY FOLDABLE SAWHORSE:

STRONG AND STABLE

There's nothing better than a silent partner you can always rely on. Build a pair of foldable sawhorses and you might not have to wait for your spouse or neighbour to come home in order to get some work done in your shop.

Photos by Rob Brown (Illustration by Len Churchill)

BY ROB BROWN

A strong sawhorse is usually just as good as a second pair of hands. In fact, it's sometimes better. If made well, it's certainly stronger than many people. It also doesn't get distracted by your shiny new tools or the whirr of your table saw blade, nor ask if it can borrow that tool on the shelf. And it's always ready and waiting in your shop, which I don't expect other people to be. A sawhorse is made even better if it's built to the right height and has a few basic accessories to make it even more flexible in different situations.

My pair of sawhorses are critical to the work I do in my one-person workshop. They're strong, stable, foldable and sized so their top surfaces are just below my table saw's outfeed surface when they have a support accessory rail on them.

Materials

There's no reason to break the bank on this project. Strong is all I'm going for. I made my sawhorses from 1/2" spruce plywood, which is cost effective and strong.

I laminated two layers for strength, but if you wanted truly bombproof sawhorses you could add a third layer. Another option would be to build these sawhorses out of full pieces, rather than piece them together with 5" wide strips that overlap each other. To give you an idea of what sort of load these sawhorses can hold, they spent considerable time supporting a solid white oak tabletop that was about 90" × 50" × 2" without any problems. Having said that, I wouldn't want to push them any further.

The only other materials needed are a small amount of solid for the lower locking hinges and a few pairs of metal hinges to keep the tops of the sawhorses together.

Rip them up

I ripped 10 strips of plywood at 5" wide to make two sawhorses. The joints all overlap each other for strength. I started by crosscutting 16 pieces to 32" long to give me eight verticals (legs, essentially) and eight horizontals (upper and lower cross rails). Next, I cut eight horizontal pieces 22" long. These run between the vertical legs. Then I cut eight pieces 19" long to give me the vertical pieces that run between the upper and lower cross rails. At this point, I only needed the eight 3" long pieces that get fastened to the bottom sections of the vertical legs, but I waited until later to cut these to exact length.

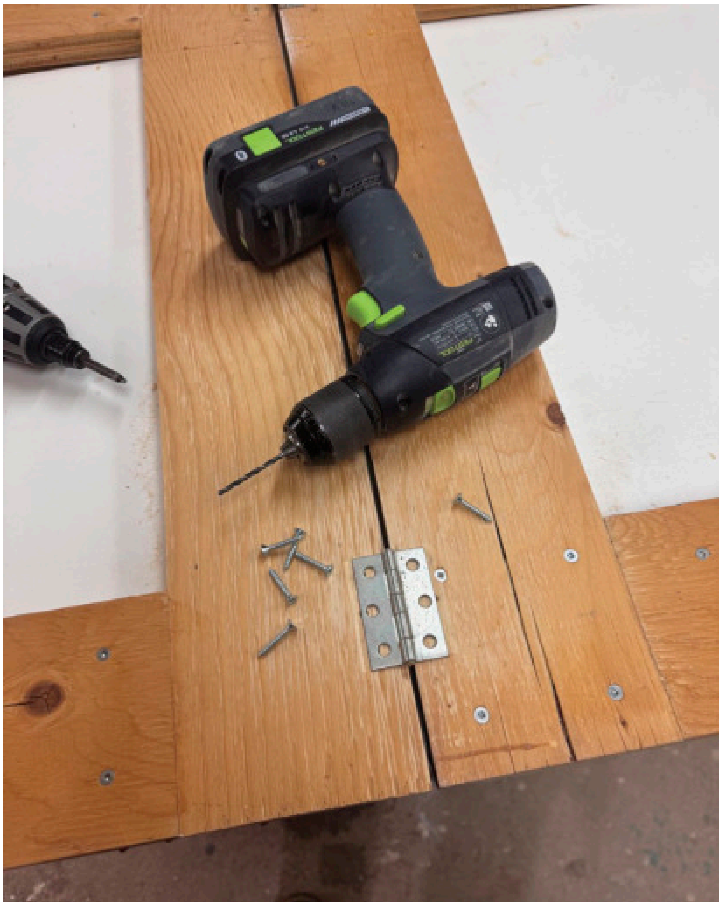
Start square

I set up a pair of straightedges to assist with keeping the assemblies square while I glued, pinned and screwed everything together. I started by placing a 32" long upper rail in the corner of the straightedges, then butted one 19" long piece perpendicularly up to it. The faces of these pieces both rested on my assembly table. Next, I brought in a 32" long vertical leg, applied a generous amount of glue to its face and positioned it on top of the other two pieces, overlapping the butt joint between the first two parts. A few 3/4" long brad nails to keep the parts from moving around, followed by a series of 1" long screws, and the first assembly was well underway.

Working somewhat quickly, I continued to bring other parts into place, pin them and screw them together. When the assembly was complete, I added a few clamps, along with a few cauls, to spread out the clamping pressure around the entire sawhorse.

As I turned the clamp handles, the glue squeezed out a bit as I had applied a generous amount of glue during assembly. Spruce plywood isn't overly smooth, and I wanted to be sure not to starve the joint. I wiped some of it away, but didn't worry too much about it. This relaxed approach is just one of the many joys of building shop projects.

To make my two sawhorses, I glued up four of these 1" thick sub-assemblies.



Bring Them Together – Once the sub-assemblies are built, lay them on their outer faces, with their upper edges about 3/16" apart, and attach the hinges.

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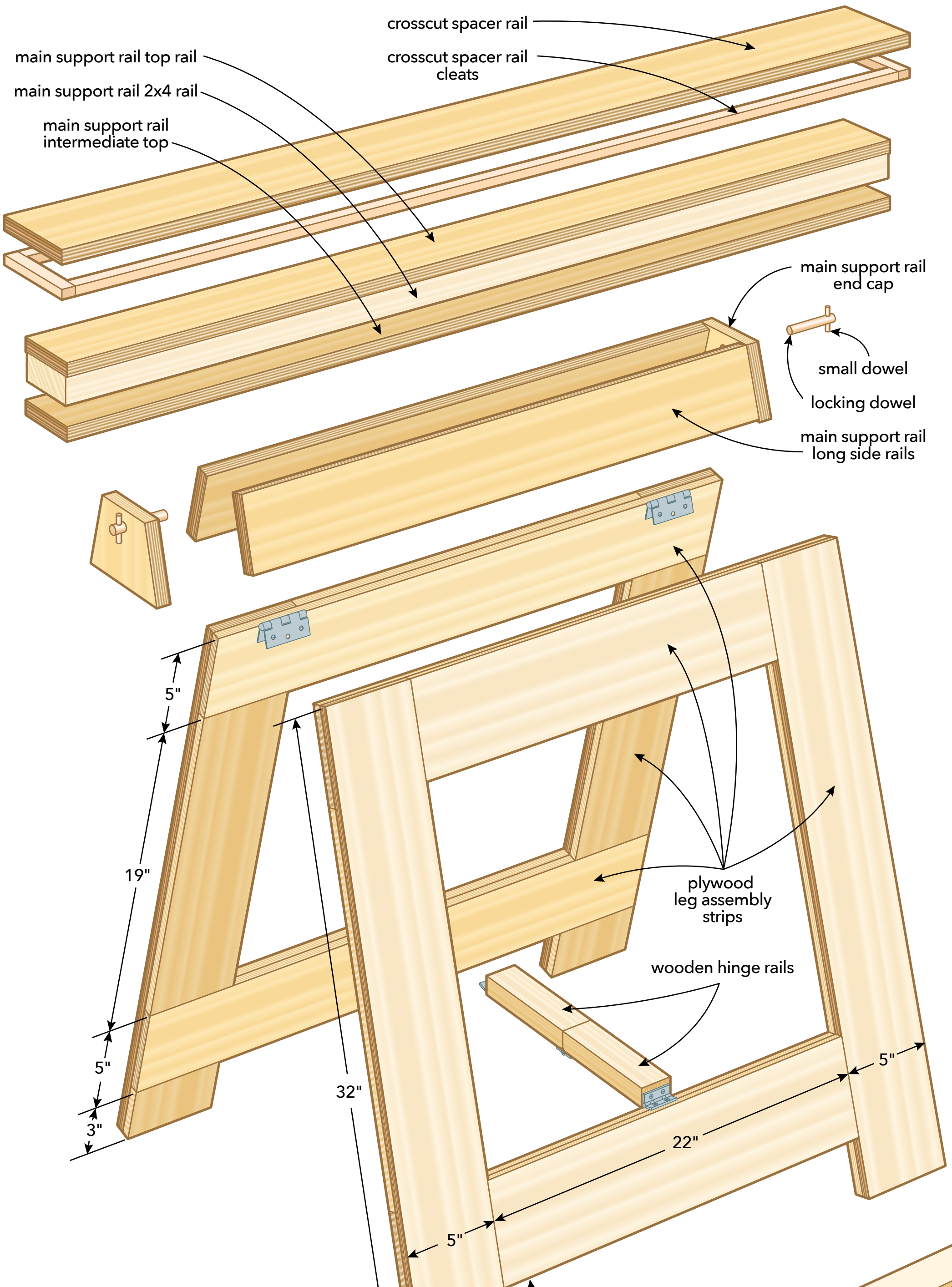
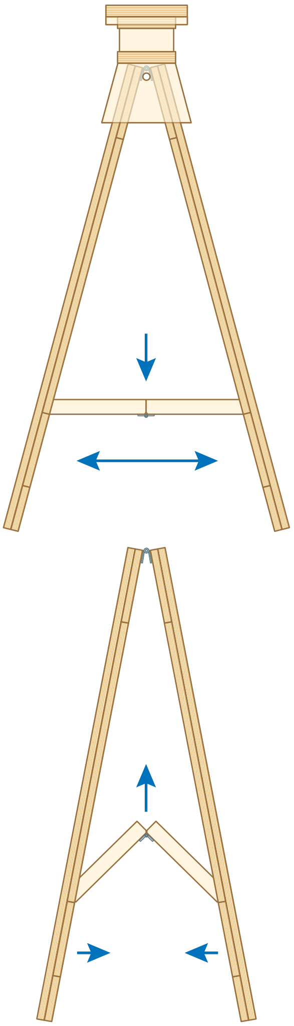
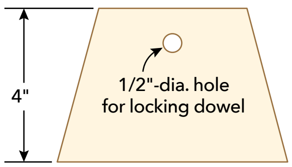
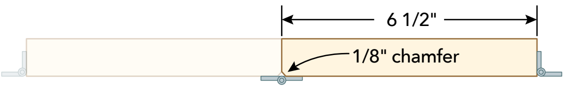

crosscut spacer rail
main support rail top rail
crosscut spacer rail cleats
main support rail 2x4 rail
main support rail intermediate top
main support rail end cap
small dowel
locking dowel
main support rail long side rails
5"
19"
5"
3"
32"
plywood leg assembly strips
wooden hinge rails
5"
22"
5"
3"



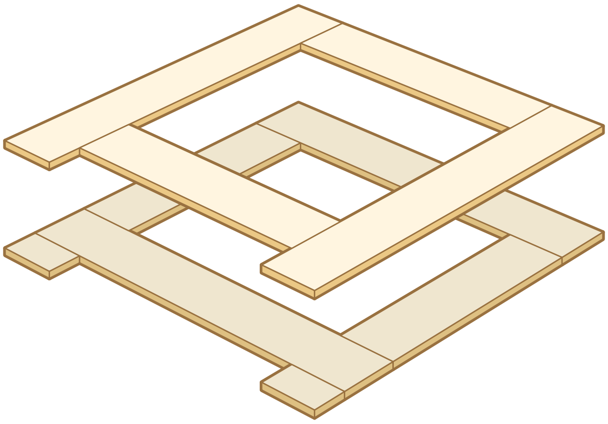
FOLDING/UNFOLDING DETAILS


4"
1/2"-dia. hole for locking dowel
6"

MAIN SUPPORT RAIL END CAP DETAILS


6 1/2"
1/8" chamfer

WOODEN HINGE RAIL DETAILS



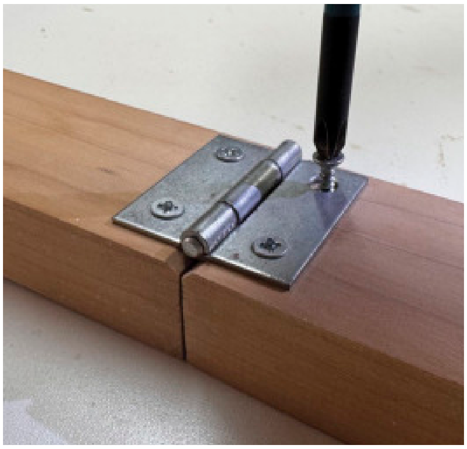
SAWHORSE STRIPS OVERLAPPING JOINTS SEQUENCE

Materials List

Part	Qty	T	W	L	Material
Sawhorse Strips	10	1/2	5	96	Spruce Plywood
Wooden Hinge Rails	4	1	1-3/4	6-1/2	Hardwood
Main Support Rail - End Caps	2	1/2	4	6	Plywood
Main Support Rail - Long Side Rails	2	3/4	4	32	Plywood
Main Support Rail - Intermediate Top	1	3/4	3-3/4	52	Plywood
Main Support Rail - 2 × 4 Rail	1	To Fit	3-1/2	52	2 × 4
Main Support Rail - Top Rail	1	3/4	3-3/4	52	Plywood
Main Support Rail - Locking Dowels	2	1/2	1/2	3	Hardwood
Main Support Rail - Small Dowels	2	1/4	1/4	1-1/2	Hardwood
Crosscut Spacer Rail	1	3/4	5-1/4	53-1/2	Plywood
Crosscut Spacer Rail Cleats	4	1/2	3/4	To Fit	Hardwood

Hardware List

Name	Qty	Size	Details	Supplier
Main Hinges	4	2-1/2"		Misc
Folding Lock Hinges	6	1-1/2"		Misc



Joined in the Middle – Join a pair of wooden hinge rails in the centre. Note the small chamfer that allows the hinge to sit flush on the rails. Also notice how the ends of the two rails butt up against one another when installing the hinge.

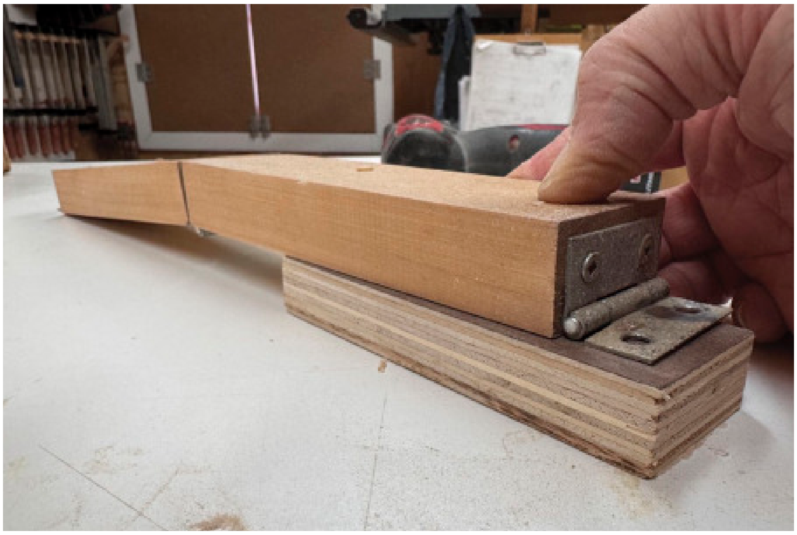
Screws?

As I mentioned, I used a few screws here and there. The challenge was that these 1" long screws often finished with their sharp tips protruding slightly through the other face of the assembly. Plywood is rarely a full 1/2" thick and I often drive screwheads ever so slightly below the surface. Shorter screws wouldn't have added enough gripping power. As long as you clamped the entire assembly before it dried, you could easily rely just on the brad nails to temporarily hold the parts together, but it didn't take me long to use my belt sander to remove the screw tips once the assemblies were all dry. Again, a bit rough, but these are workshop fixtures.

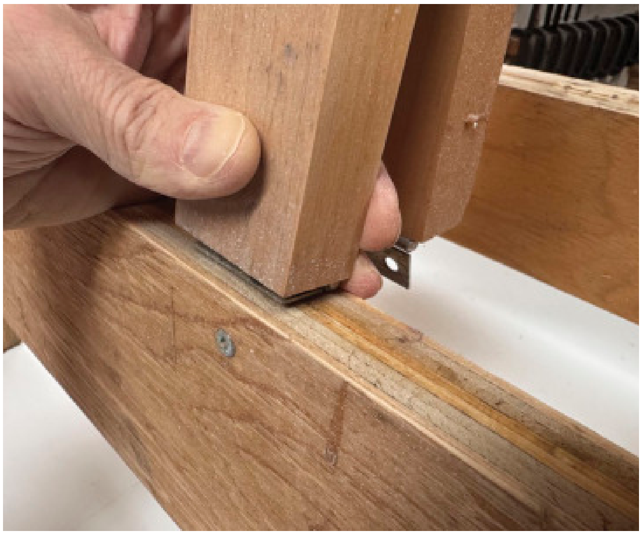
Bring them together

With the glue dry, ease any sharp edges. You could even hit the edges with a small chamfer or roundover router bit if you wanted to. I found heavily easing the lower ends of the legs, where the sawhorses come into contact with the ground, makes the legs less likely to chip or splinter as they get dragged across the shop floor in the future.

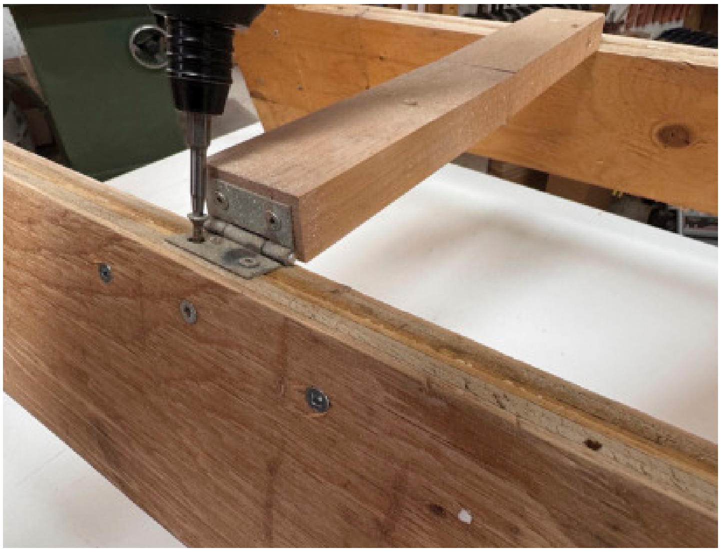
Position the upper edges of two sub-assemblies together, separated by about 3/16" or the width of the knuckle. Open



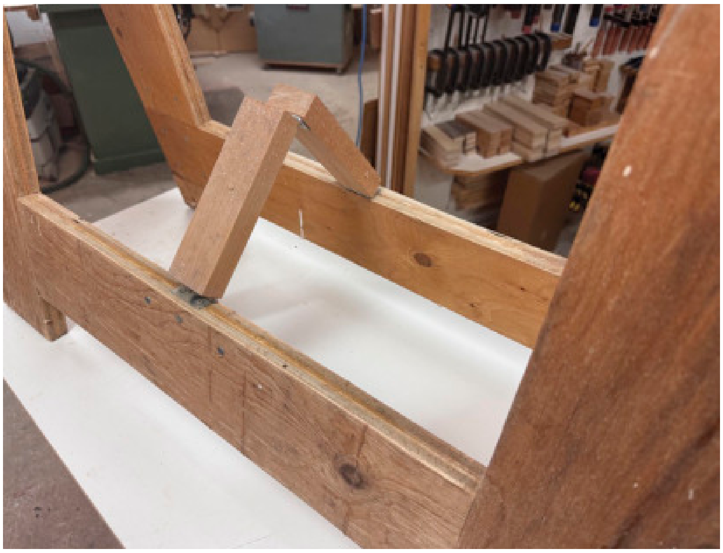
Install the End Hinges – It's easiest to install the end hinges next. Use a piece of scrap to allow each part of the wooden hinge to sit flush on another surface, then fasten the hinge to the end of each rail so the other leaf of the hinge rests flat on the piece of scrap.



Careful Location – With the rear face of the hinge rail in the same plane as the rear face of the sawhorse sub-assembly, locate where the hinge should be attached.



Secure the Wooden Hinge – With both the wooden hinge and the sawhorse open, install the last few screws to fix the wooden hinge in place. Make sure to predrill so you don't split the plywood.



Easy to Open and Close – Here, the wooden hinge is shown partially open. By lightly pressing the centre of the hinge downward, the hinge is locked in its open position. Gently lifting up the centre of the hinge releases the tension and allows the sawhorse to fold into its closed position for storage.

the metal hinges and centre them over the narrow gap, ensuring they're facing the correct way. You'll need the two sub-assemblies to be able to close completely, like the covers of a book, once the hinges are installed. Attach them with screws.

The wooden hinge

This hinge is designed so it easily drops into its open and locked position when you separate the two lower ends of each assembly. It's also designed to hold the base of the assemblies open until you pull up on the centre of the hinge to release the tension. The lower two faces of each wooden hinge more or less rest together when each sawhorse is in its closed position. If the wooden hinges stop the mating sub-assemblies from fully closing, they're positioned slightly incorrectly.

Start by milling up a blank of hardwood about 28" long × 1-3/4" wide. I made mine about 1" thick, but even somewhere just over 3/4" would work. Cut four pieces 6-1/2" long from that blank. Butt two hinge sections end-for-end so there's no gap between them, and install the smaller hinge across the joint, centred on the joint. Repeat for the other pair. Note you may have to slightly relieve the mating edge of both of the 6-1/2" long wooden pieces to make room for the knuckle of the hinge in order for the hinge plates to sit flat on both wooden hinge pieces. A simple chamfer or roundover with a few passes from a block plane should work nicely.

To install the wooden hinge pairs on each sawhorse, first attach the hinges on either end. Rest one 6-1/2" long hinge rail on a piece of scrap and fasten the hinge to the end of the hinge rail so the opposite leaf of the hinge is sitting flat on the piece of scrap. Repeat this for the other end, too. Next, butt the wooden hinge assembly up against the lower cross rails of one of the sawhorses, centred on its length. The lower / inner face of both the hinge rail and sawhorse sub-assembly should be in the same plane. If you made the hinge rails 1" thick, both front and back faces of these parts will all be aligned. Mark where the hinge should be located, then open both assemblies and screw the hinges in place. It might

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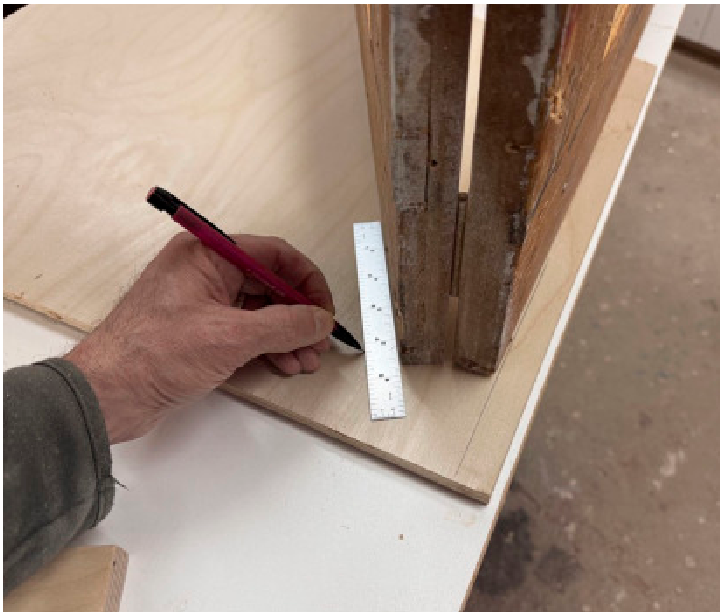
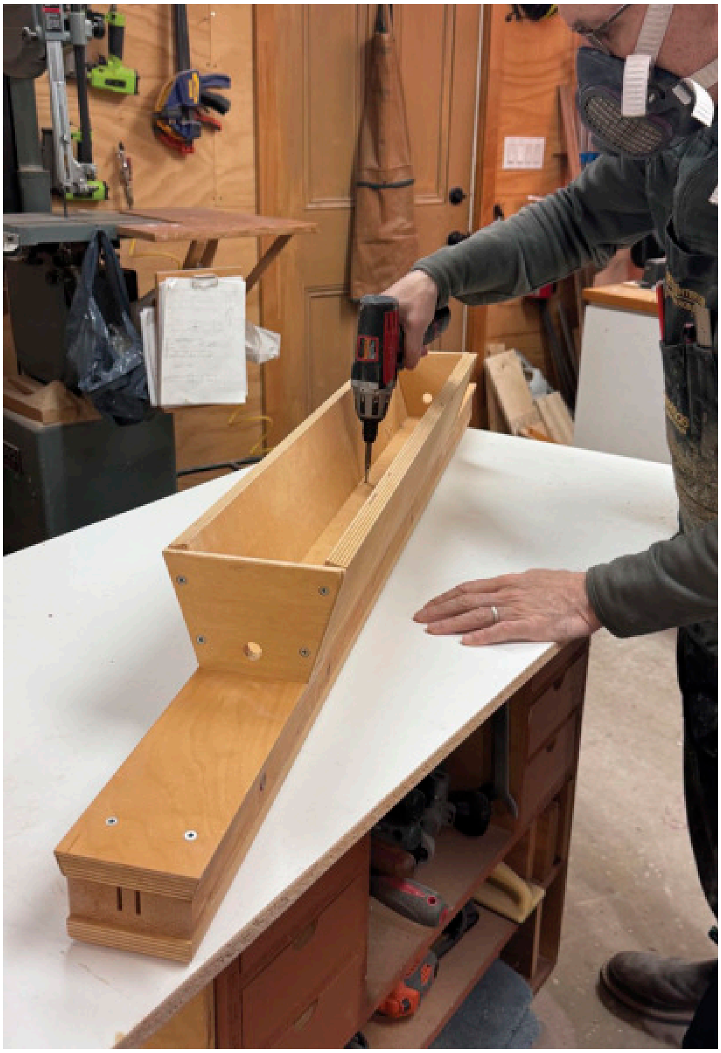


End Cap Layout – By placing the open sawhorse directly on top of a piece of 1/2" plywood, you can easily lay out the size and shape of the end cap. The 3/4" wide gaps will account for the space the long side rails will take up.



Finally Secured – With all the parts of the main support rail complete, Brown screws them together.

be best to start with just one screw on each side, so you can close the sawhorse and make sure it opens and closes nicely, before installing the remaining screws. The hinge allows the sawhorse to open to about 30° and gives it a base width of about 19", though these dimensions aren't critical.

To finish, or not to finish?

At this stage, you can put the sawhorses to work; they'll give you decades of quiet assistance around the shop. But if you made these out of nicer material than spruce plywood and wanted to add a few coats of finish to further refine the look of your new best friend I wouldn't judge you harshly.

Accessorize

As-is, these sawhorses are strong and stable, not to mention able to be folded away so they virtually disappear when you don't need them. But with a few custom-made accessories, you can turn these two workhorses into workshop stallions.

I made a support rail that fits on top of the sawhorses. I made only one, as that's all I need, but if you'd prefer a support rail on top of both sawhorses at once to support full 4' × 8' sheets, or other large assemblies, go for it.

Main support rail

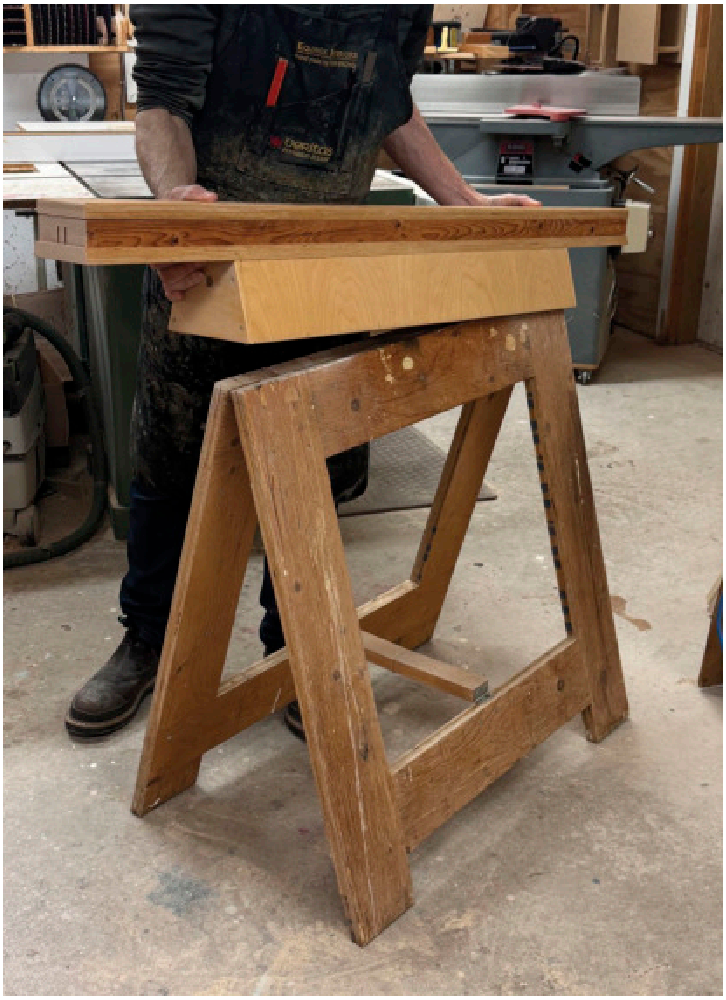
I found it easier to build the sawhorses so they were a few inches below the height of my table saw's surface, then customize the thickness of this main support rail so its upper surface is about 1/8" below my table saw's surface. This surface will give me plenty of support when ripping full sheets, if I ever need it. Only one of these support rails are likely needed.

While there's nothing wrong with making two main support rails, I only needed one.

When machining the parts for the main support rail, the most important thing is that they fit your sawhorse, so you might have to adjust the dimensions a bit. To check the sizing, place a piece of 1/2" plywood on your workbench and position a completed sawhorse on top of the plywood, resting on its side. Mark a line on the plywood 3/4" in from one of its straight edges and align the sawhorse up with that. The 3/4" will account for the long side rail that the 1/2" plywood end caps are joined to. From there, mark the angle of your sawhorse, as well as how wide and long the end cap needs to be. Trim that piece on the bandsaw and then make three more just like it.

Attach one long side rail between two end caps, add the intermediate top, then place the sub-assembly on top of a sawhorse and attach the other long side rail. Doing so while it's on the sawhorse ensures the main support rail will fit nicely on the sawhorse when it's all together.

This is where a bit of math is needed. Once the main support rail is on the sawhorse, it needs to be just below the height of my table saw, so work can be fed directly onto it. Set the sub-assembly on the sawhorse, bring it up beside the table saw and measure the difference. You have to add enough material to bring the upper surface of the main support rail to the right height. For me, I added a piece of 3/4" plywood on the very top, so the surface was as smooth as possible, and dressed a 2 × 4 to thickness to make up the rest of the difference. I screwed through the 2 × 4 rail, up into the top rail, then fastened that sub-assembly to the rest with a few screws driven up



A Nice Fit – The main support rail should easily fit onto the open sawhorse. If there's a bit too much friction, sand the sawhorse edges or faces until the fit is right.

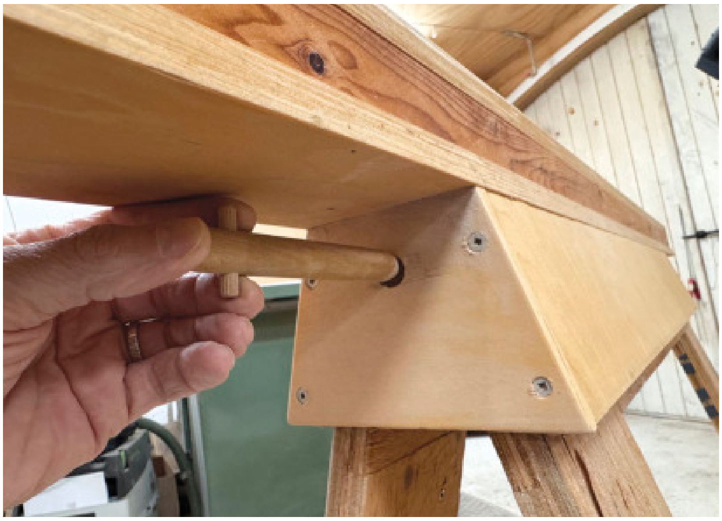
through the intermediate rail. That way no screws were visible on the top of the main support rail.

The final touch is a locking dowel that stops the main support rail from tilting up if a lot of weight is applied to one end. Any diameter dowel around 1/2" will work. Mark it for length, clamp it in a vice, then drill a hole in it so you can add a smaller dowel across its diameter. This smaller dowel is so the main dowel won't fall completely through a hole that gets drilled in the support rail. Flip the main support rail upside down on your workbench, then rotate your sawhorse upside down and place it in the main support rail. Drill a single hole through both of the end caps. This hole should be the same size as your dowel and as high up into the "V" of the sawhorse as possible. Once the sawhorse is right side up and the dowel is inserted into the hole, it will keep the main support rail in place.

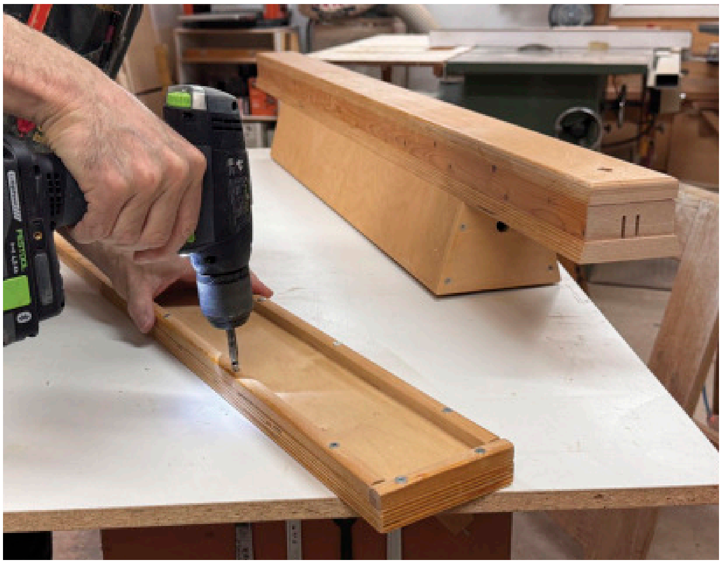
The upper surface of the support rail is then finished with at least three coats of a durable finish, mainly to create a nice smooth surface for workpieces to slide across. I chose an oil-based polyurethane.

Top it off with a crosscut spacer rail

As of now, this approach gives me a support surface the same height as my table saw's top. I quickly realized that when I'm



Dowels to the Rescue – A dowel in either end of the main support rail that protrudes into the "V" the two sawhorse halves create will ensure the main support rail stays in place.



A Snug Fit – When Brown built the crosscut spacer rail, he made it a friction fit. Once it's on top of the main support rail it provides support when crosscutting long workpieces.

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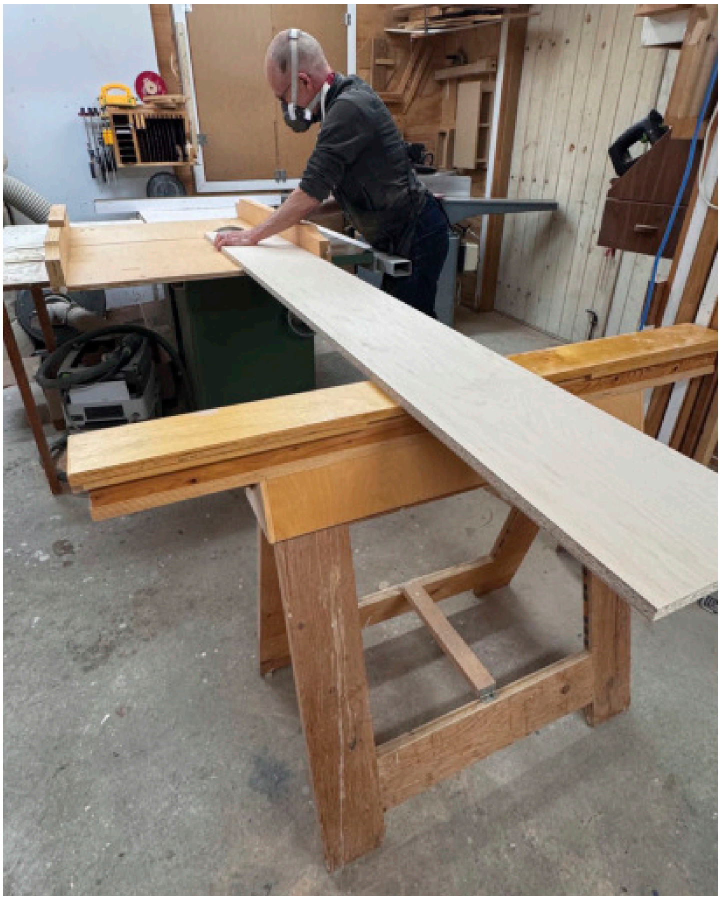

Helping Hand – All the parts working in tandem allow Brown the flexibility to take care of many cuts and operations that would otherwise need another set of hands.

using my crosscut sled, which has a 3/4" thick base, my support was 3/4" too low. I made a fairly simple accessory that fits on top of the main support rail and brings the overall height up equal to my crosscut sled.

A piece of plywood, sized about 1-1/2" longer and wider than the top surface of the support rail, is where I started. Cleats measuring 3/4" wide were installed flush with the outer edge of this surface, carefully located so the rail sits nicely on top of the main support rail when it's done. Again, I finished it with three coats of oil-based polyurethane. A hole in both the main support rail, as well as the 3/4" spacer, allows both of these accessories to be hung on the wall, ready for action.

Over the years these sawhorses and accessories have gotten me out of many jams. Working alone in a shop is a lot of fun, but there are times now and then when I wished I had a second pair of hands. These sawhorses don't take care of all those times, but certainly many.

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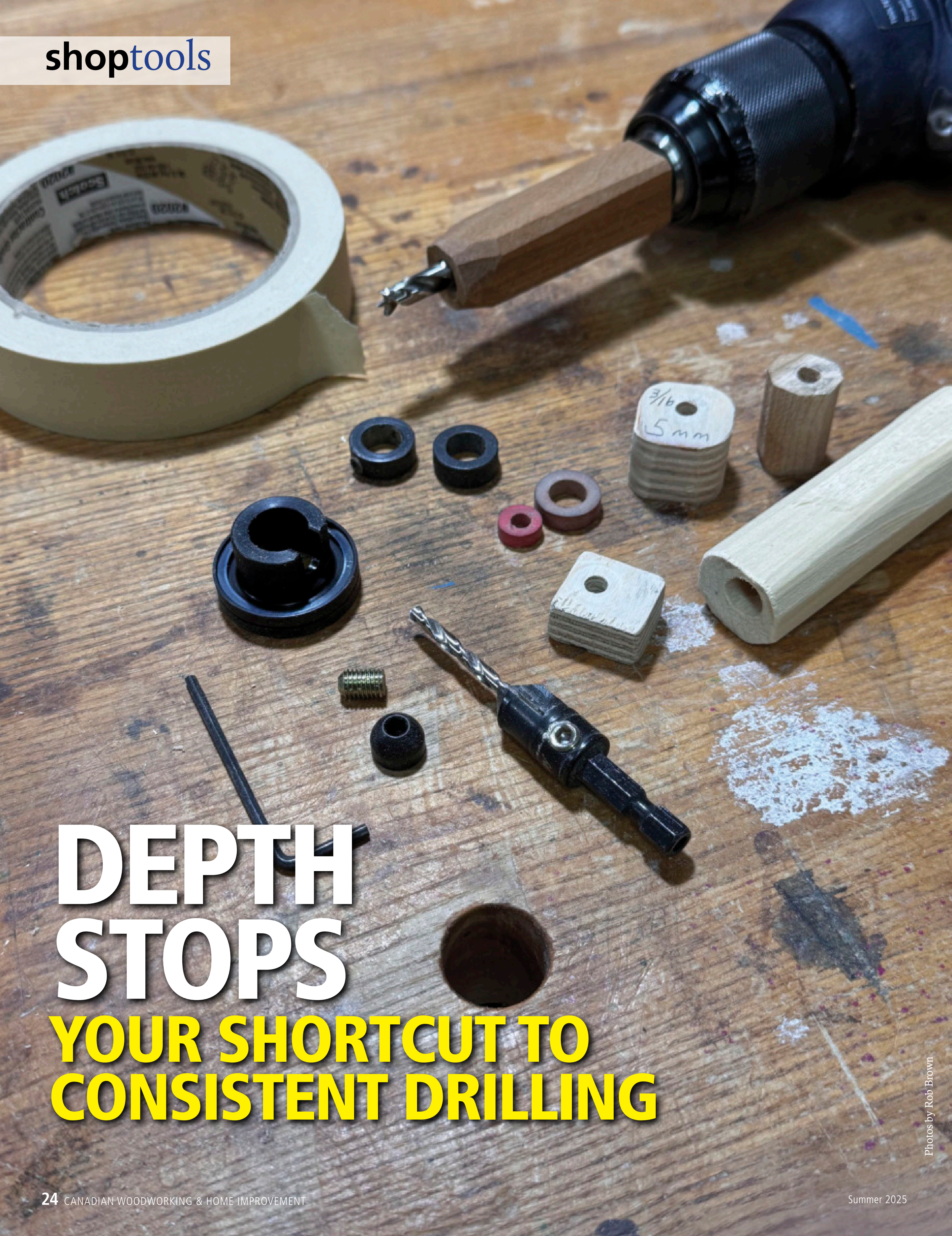


DEPTH STOPS

YOUR SHORTCUT TO CONSISTENT DRILLING

Photos by Rob Brown

Ensure consistently accurate depth when drilling screw holes.

BY CARL DUGUAY

When drilling stopped holes, such as for screws, inserts or dowels, you generally need a way to limit the drilling depth. On a drill press, this isn't an issue, as most models have built-in depth stops. However, when drilling freehand, maintaining consistent depth can be challenging. Fortunately, there are several ways to make the process easier and more precise. Let's explore a few options.

Masking tape

One of the simplest and most common methods for setting drilling depth is to wrap a piece of masking (or painter's) tape around the bit just above the required depth. This works well when drilling only a few holes and when precise depth isn't critical. However, the tape can shift easily, especially after multiple holes. The edge of the tape that contacts the workpiece can compress after drilling even a few holes, altering the drilling depth. If using this method, it's a good idea to frequently check that the tape hasn't moved and replace the tape when it has moved.

Also consider just how critical the operation is if you're using masking tape as a depth stop. Some materials, like plywood, particleboard, ring porous woods and very soft woods, have different densities within the material. This means you have to push the drill somewhat hard at some points, while at other points the drill bit is more likely to plunge easily into the wood. The likelihood of boring too deep is increased when using masking tape, as it isn't a physical barrier to drill depth. Even if the material is very uniform in density, there's still a chance you will bore too deep.

Commercial drill stops

For drilling multiple holes, a depth stop (also called a stop collar) is a more reliable choice.

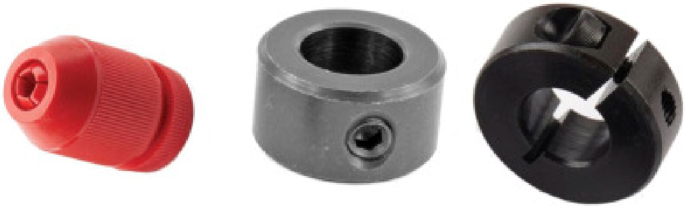
The red plastic twist-on stops are inexpensive but generally ineffective. Also ineffective are the rubber rings that fit around a bit and can be slid up or down the bit to mark a depth. Both of these stops can easily move on the bit without the user knowing. They also don't provide a positive stop to keep the bit from drilling too deep.

Round metal depth stops are more secure as they attach to the drill bit using a set screw. However, some designs have drawbacks. Stops with a set screw that tightens directly against the drill bit can damage the cutting edges (lips) of the bit. Depth stops can also tilt slightly when the set screw is tightened, affecting accuracy. Some versions use a clamping-style collar that tightens around the bit instead of against it. While this prevents damage to the bit, it can be difficult to tighten securely enough to prevent slipping. If using any of these drill stops be aware that over-tightening the set screw can damage the drill bit. Snug it down just enough to hold firm.

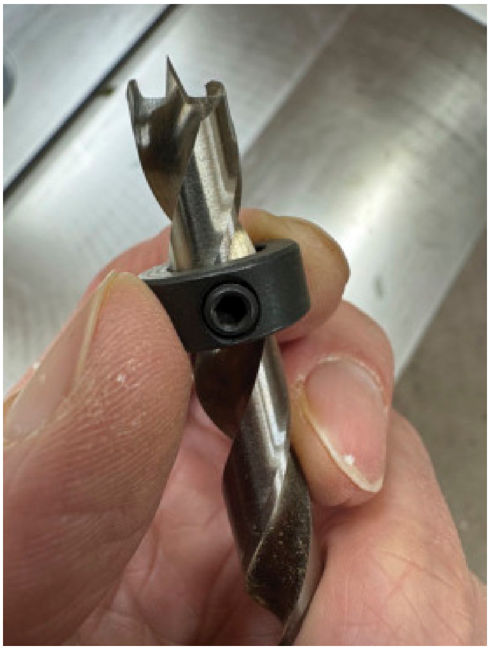
Generally, for each drill size you'll purchase a matched depth stop. If you use a wide range of drill bit sizes in your work you can end up with a half dozen or more depth stops. However, Amana Tool (Amanatool.com) makes two adjustable depth stop collars that will accommodate drill bits from 1/8" to 1/4" and 1/4" to 3/8".

Masking Tape – Using masking tape as a depth guide is simple, and has its place, but since it doesn't actually stop the drill bit from boring deeper, it shouldn't be used when precise depth is critical.

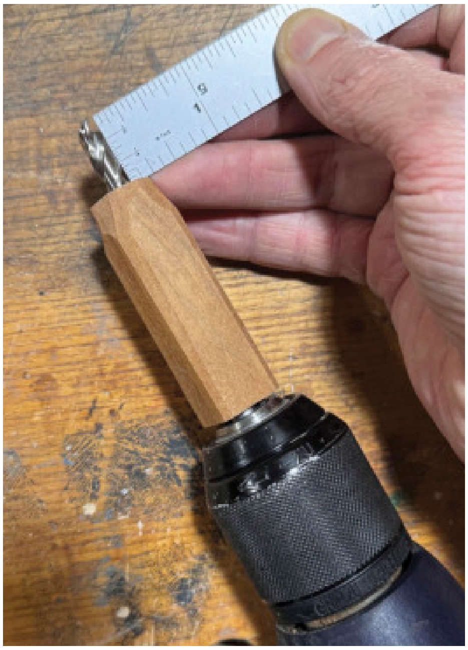
Not Recommended – Cheap rubber depth stop rings are likely even worse than masking tape, as they can more easily move up the drill bit without the user realizing.



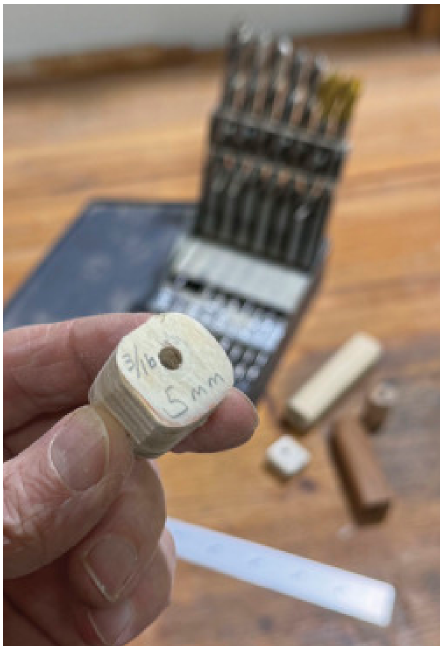
Lots of Options – The adjustable plastic stops (left) can slide up the drill bit unnoticed. The two metal options need to be sized according to the diameter of the drill bit in order to work, meaning you'll likely only have a stop for a few sizes of bits.



Metal Depth Stops – This type of depth stop can be used with good success, though be careful where you position the set screw when installing the depth stop on a bit. Make sure the set screw isn't positioned over the sharp lip at the outer edge of the bit, as that area can easily be damaged.



Shop-Made Stops – Not only is a shop-made stop strong and accurate, it's also very cost effective. This long one has eased edges. If you want to adjust the depth of the hole you're left with, you can always adjust the amount of protrusion of the drill bit within the drill's chuck. There's also nothing wrong with using more than one shop-made depth stop at the same time to get the depth you need.



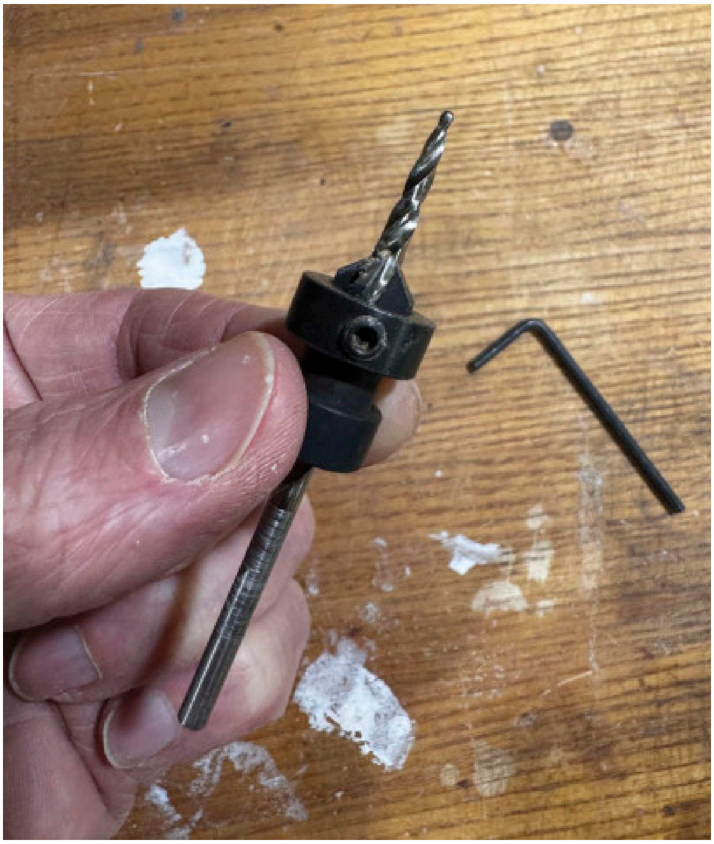
Plywood Works, Too – Quality plywood is strong and won't fall apart during heavy use. It's also a good idea to label the stops with the diameter hole to make selecting a stop easier.

Shop-made drill stops

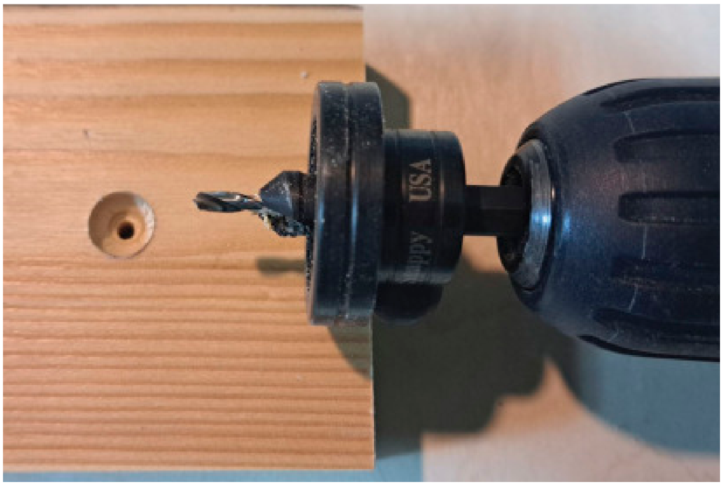
My preferred method is using shop-made drill stops. They're quick and easy to make, provide accurate results and can be custom-sized for any drill bit. Most commercial drill stops are only available in a limited range of sizes, but with a homemade version, you can create stops for any bit diameter.

While you can use any wood, hardwood works best. Dowel rods are a great option. Use a bandsaw to mill a blank wider than the bit diameter. Then use a drill press to bore a hole through the blank, matching the drill bit size. If you started with square stock, chamfer the edges for a clean finish. Cut the stop to length based on the required hole depth and the drill bit length. You can further fine-tune the depth by adjusting how far the bit extends from the chuck.

Amana Stop – Amana makes a pair of stops, accommodating drill bits from 1/8" to 1/4" and 1/4" to 3/8". (Photo by Amana)



Simple Countersink Stop – This Lee Valley countersink with tapered bit can be used with an adjustable round metal stop.



Snappy Countersink – This countersink can be used with a large depth stop. The outer perimeter of the stop rotates to eliminate marring the workpiece. (Photo by Carl Duguay)

When using a wooden depth stop, the last thing you want is for it to break during use. When making wooden depth stops, ensure the material left around the central bit clearance hole is strong enough to stand up to normal use. Not only do you want the material to be on the denser side (hard maple and many exotics work well) but you also want the walls of the stops to be thick enough to have enough strength. Another thing to consider is ring porous woods; they have naturally weak areas where the open pores are located, and could break more easily if stressed, allowing you to plunge the bit through the workpiece and out the other side, potentially ruining that workpiece. Quality plywood, especially Baltic birch, is another option for making depth stops. Just be sure to bore the bit clearance hole perpendicular to the plies, rather than parallel to them.

By using shop-made stops, you gain better control over drilling depth while avoiding the limitations of commercial alternatives.

Countersinks with adjustable stops

Sometimes you want to drill to a certain depth and also set a screw head to rest flush or below a surface. For this you'll use a countersink with an adjustable depth stop. There are a number of these on the market. They typically have a quick-release-style 1/4" hex shank and are available in drill sizes that match common screw diameters: 3/32"; 1/8"; 5/32"; 9/64"; and 11/64".

Festool Countersink – Festool offers this version in 3.5, 4 and 4.5mm diameter clearance bits. The round stop rotates, greatly reducing the chances of damaging the workpiece. (Photo by Festool

Snappy Tools (Snappytools.com) makes a rotating depth stop collar that works with countersinks from 5/64" to 11/64". The free-spinning stop collar does a good job of preventing burn marks on your workpiece as long as you don't apply excessive pressure when drilling. You can adjust the depth stop collar to drill a shallow hole enough for flush-mounting screwheads or deep enough to accommodate a plug to cover the screwhead. The Snappy countersink has a standard 1/4" hex shank.

Amana Tool (Amanatool.com) has an adjustable non-marring brass depth stop collar that you use with Amana countersinks from 1/8" to 1/4". Countersink hole depth is from 1/16" to 3/8". The Amana countersink has a 3/8" shank.

Festool (Festoolcanada.com) has three adjustable countersinks with 3.5, 4 and 4.5mm drill bit diameters. All have free-spinning depth stops to prevent surface marring. While designed for Festool cordless drills with CENTROTEC interface they have a standard hex shank that fits most drill chucks.

Depth stops and adjustable countersinks provide a reliable and easy way to set precise drilling depths. Just make sure you use sharp bits; dull bits will cause tear-out and require more force, leading to inconsistency.

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What About the Drill Clutch?

If you need to drill a hole to a specific depth, you might instinctively think of using your drill's clutch. However, the clutch is designed to manage torque, which is the rotational force of the drill. Its main purpose is to prevent screws from being driven too far and to minimize screwhead stripping. While it can help with sinking screwheads, it's not designed to control the precise depth of a drilled hole.

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Dial it In – Learning how to properly adjust the clutch is an important part of using a drill. The clutch manages the amount of torque the drill is producing, not necessarily how deep the head of the screw you're driving will go, as all screws and materials are different.

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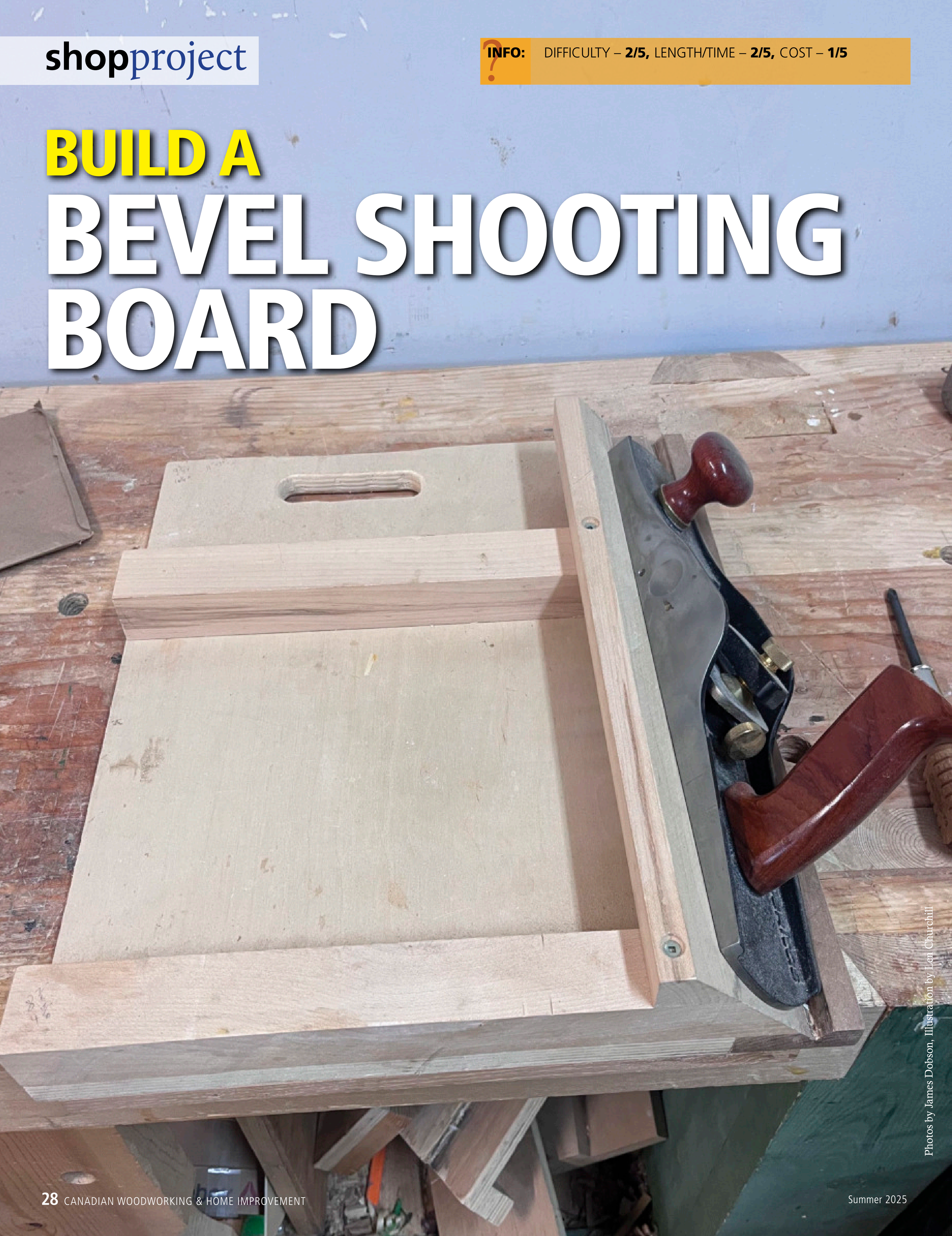
BUILD A BEVEL SHOOTING BOARD



Photos by James Dobson, Illustration by Len Churchill

This simple jig makes bevels easy and accurate every time.

BY JAMES DOBSON

This shooting board is for cutting bevels in the endgrain of workpieces. It's perfect for small boxes and small case sides. This jig isn't to be confused with a mitre shooting board, which could be used for picture frames. A bevel runs the width of a wider workpiece, while a mitre is angled across the face of a workpiece.

This jig is built from Baltic birch plywood and a few pieces of hardwood. It should be sized around the plane you plan to use with it. I'm using Veritas's Low Angle Jack plane, which is common in many workshops, but be aware that you may need to adjust dimensions to fit the plane you wish to use.

Start by shaping the running board by planing a 2-1/2" wide piece of hardwood to the exact same thickness as your piece of plywood, which is unlikely to be exactly 3/4". Ensure both sides of this board are exactly parallel. You will use it to ensure that your fence is square to the plane, later in the process. Set your table saw blade to 45° and cut a groove about halfway through the thickness of this piece of hardwood. Flip the board end for end and adjust your fence so you're removing a triangular piece of wood from the board.

Glue this piece of hardwood to the sheet of plywood. Use two or three biscuits, dowels or Dominos if you need assistance aligning the pieces.

The fence and the support block

These two pieces are identical. The fence is the part the workpiece will rest against during use, while the support block just keeps the top support parallel with the base. Make both at the same time and use the better one for the fence. Ensure you have a flat face and that each corner is perfectly square.

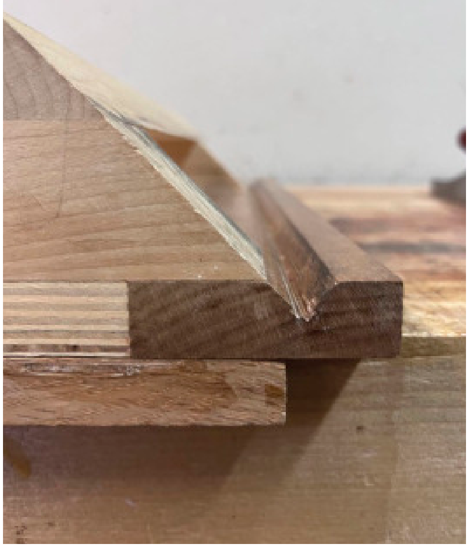
The height of the fence will depend upon the width of your plane. My fence is 1-1/4" tall. When my plane (a Veritas Low Angle Jack plane – 2-3/4" wide) is running in the groove at a 45° angle, the top edge of the plane projects above the fence and rests upon the top support. Depending on the width of your plane, you may need to adjust the fence height.

Cut a 45° angle on the end of each piece. Attach your support block first. Drill three holes through the plywood base and countersink from the bottom. Align the support block at 90° to the track cut in your running board. The slope on the support block should align with the groove in the running board. Once aligned, attach with clamps. Making sure it does not shift, drill pilot holes through the plywood base into the support block and attach with screws. You can add glue but I find it difficult to keep the block perfectly aligned with slippery glue in the joint.

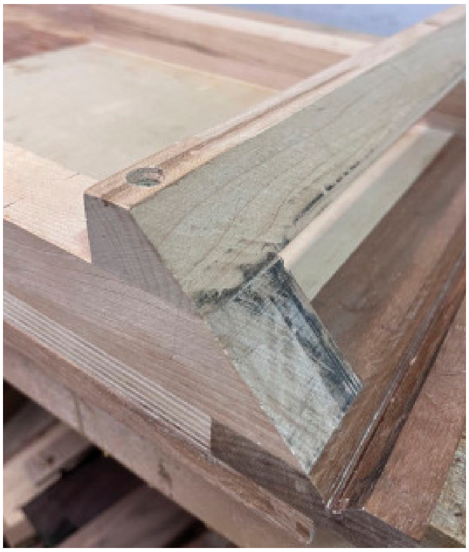
The fence is attached in exactly the same way but perfect alignment is critical here. Start by drilling the holes in the plywood base and countersinking. Aligning your fence is complicated here by the difficulty in placing a clamp at the centre of the jig. To overcome this, ensure that the slopes are aligned on the fence and the running board and then drive a screw through the base into the fence (don't forget the pilot hole). Tighten it so the fence doesn't wiggle back and forth, but not so tight you can't shift it. Using your square, align the fence square to the running board, then clamp the end in place. Add the remaining two screws to secure it.

Add the top support

The final piece is the top support. Rip a piece of hardwood at 45° and crosscut it to the same length as your plywood base. Drill pilot holes, countersink and attach to the fence and support block aligning the slope of the top support with those on the block and fence. The top support, fence/support block and running board should have a surface on the same plane that is aligned at 45° relative to

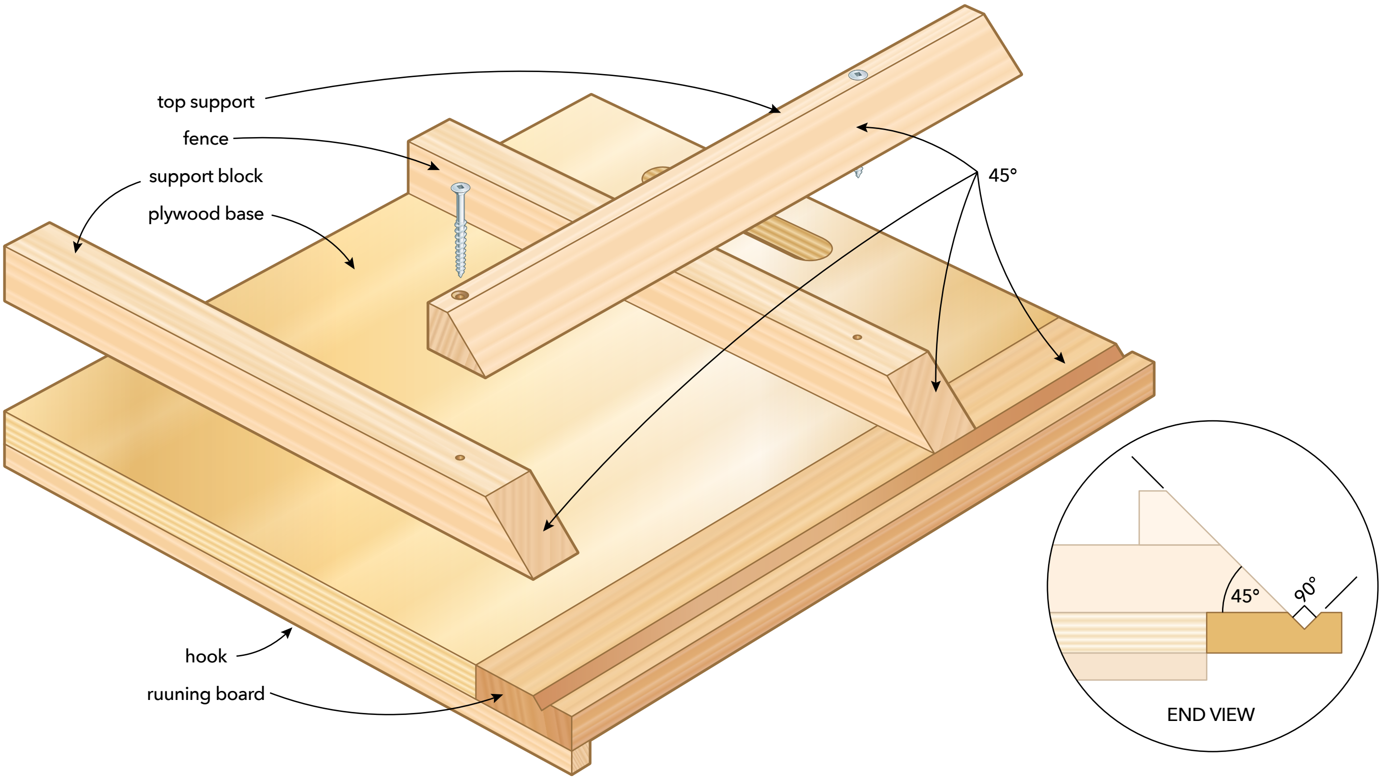


Running Board – The running board supports your hand plane during use. A V-notch is cut into the running board before assembly.



Careful Alignment – The 45° angles on the fence, the support block and the top support are all carefully aligned with the V-notch in the running board. The hand plane will run on these surfaces during use.

Attach the Fence – The fence is carefully aligned so it's perpendicular to the V-notch, then fixed in place from below with screws. Not using glue will mean you can further tweak the angle to achieve a perfectly square cut down the road.



Materials List

Part	Qty	T	W	L	Material
Base	1	3/4	13	17-1/2	Baltic Birch Plywood
Running Board	1	3/4	2-1/2	17-1/2	Hardwood
Fence	1	1-1/4	1-1/4	14-1/2	Hardwood
Support Block	1	1-1/4	1-1/4	14-1/2	Hardwood
Top Support	1	1	1-1/2	16	Hardwood
Hook	1	3/4	3/4	14	Baltic Birch Plywood

the plywood base. This is what your hand plane will travel on, in use. The top support extends past the fence to provide support to your hand plane at the end of each stroke.

The hook

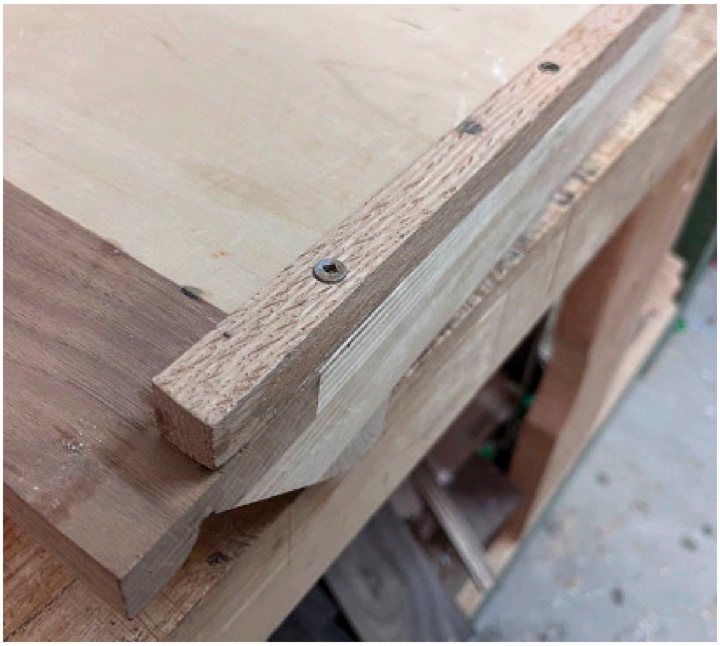
The final task is to attach a hook on the bottom edge of the plywood base. This is just a simple strip of material that hooks to your bench to keep the jig from sliding away as you use it. Drill pilot holes and attach it with a couple of screws. You can also add a handle or a hole for hanging the shooting board on the wall.

Test it out

Take a couple of passes on a test board. Ensure that your plane blade is not skewed; it needs to be aligned with the mouth of the plane for the jig to work. Check your angle. If you've been accurate to this point you should have a perfect 45° bevel. Then check to see that your 45° cut is 90° to the edge of the test board. Again, accuracy in your work to this point should mean it's square, but if not, here you can make some adjustments. A strip or two of tape against the fence can accommodate slight deviations. Or, if you didn't secure the fence to the base with glue, you can make some slight adjustments to it and re-attach it. Once the jig is aligned, long edge bevels should be simple.

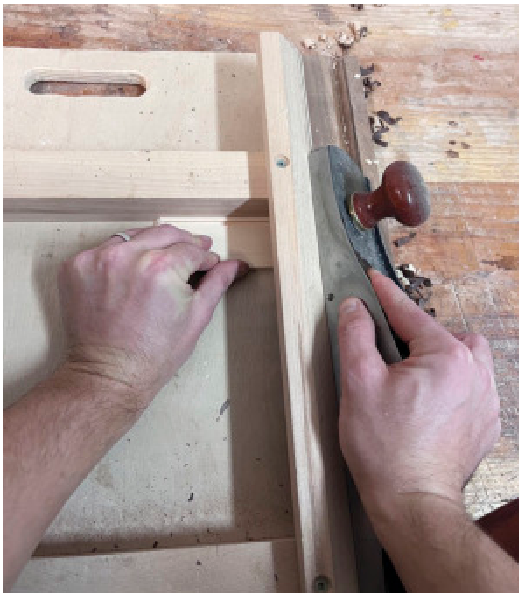
Extend It – The top support extends beyond the fence to offer some support for the hand plane during use.

The bevel joint is the bane of many a woodworker's experience. They look so simple but



Keep Still – The hook, which gets fastened to the underside of the shooting board, does a good job at keeping the shooting board in place during use. Clamping the whole jig down might also be needed.

the smallest of errors or slips can leave a gap that ruins their smooth, seamless look. Putting time into a dedicated shooting board can save you hours of frustration later.



Time to Bevel – In use, the workpiece gets pressed against the fence while the user trims the bevel onto it.

JAMES DOBSON
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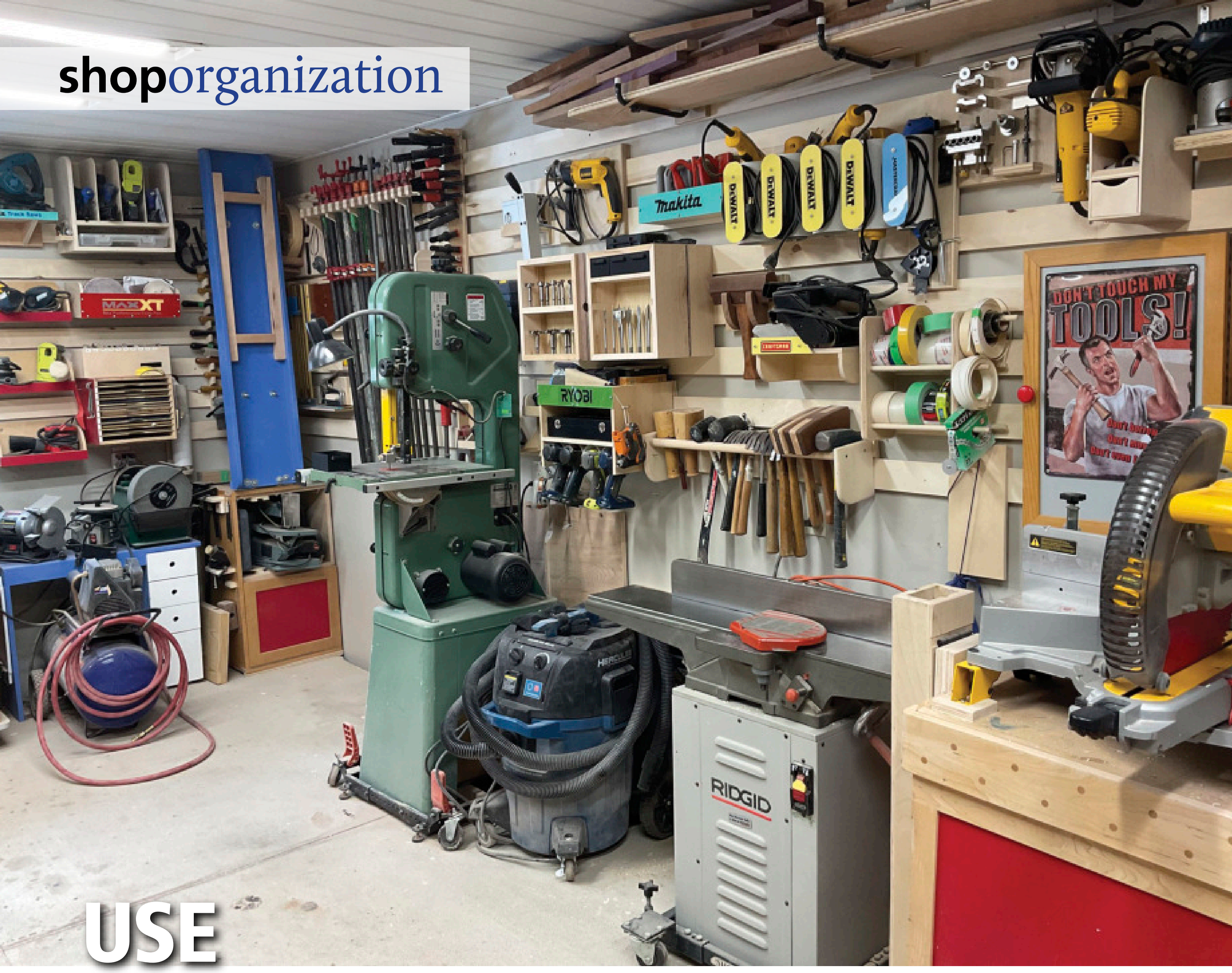
DON'T TOUCH MY TOOLS!
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USE FRENCH CLEATS TO ORGANIZE YOUR WORKSHOP

When you have a small workshop, the key to staying organized and productive is storage that's not only efficient, but also adaptable to ever-changing needs.

Photos by Rick Campbell

BY RICK CAMPBELL

After years of experimenting with a variety of wall storage alternatives, I've decided the solution that ticks all the boxes for me is the French cleat system. French cleats have become popular in recent years, but they're not a new innovation. They've been around since the early 1800s when French ship builders would use the technique to hang ropes and tools on the walls, thereby freeing up limited deck space. Today, woodworkers are discovering that French cleats are also an excellent choice for the workshop because the system is capable of carrying heavy loads, are a snap to install with just a few tools, and can be easily reconfigured whenever the need arises.

There are basically two main components to every French cleat installation: support rails permanently mounted to the wall and moveable storage fixtures suspended from the rails. The rails have a 45° bevel milled along the top edge and the fixtures have a cleat mounted on the back with an opposing 45° bevel formed on the bottom. When the fixtures are suspended on the rails, the complementary angled edges of the two components interlock to create a secure connection. It's the weight of the fixture and gravity working together that make the system work. The heavier the object, the more reliable the connection.

Plywood is typically chosen for the rails and cleats because the alternating grain pattern of the thin plies make these sheet goods stronger than other alternatives. Oriented strand board (OSB) or particleboard aren't good options because the products could break apart under the force of a heavy load.

Sometimes I'll use hardwood to make my cleats, but solid lumber would be an expensive choice for an entire wall of rails. However, solid lumber would be a great choice for an area that needed high strength.

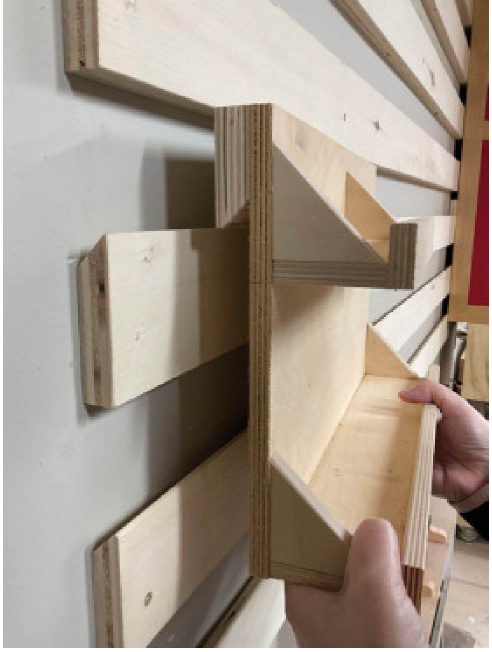
Regardless of the materials you decide to use, there's a golden rule to keep in mind for any French cleat installation: the rails and cleats must be exactly the same thickness for the system to work effectively. If the cleat and rail thicknesses don't match, the parts won't lock firmly in place, making the fixtures unstable on the wall.

Generally, I recommend using a minimum of 3/4" material for French cleats but you may get away with something thinner if you only plan on hanging lighter objects, such as a collection of small bench tools.

First the rails

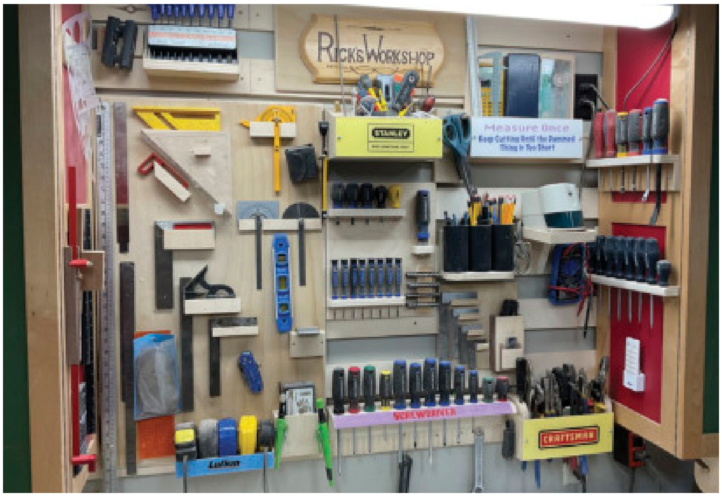
You may choose to install just a few French cleats to address a particular storage issue in a specific area of your shop or you could do what I did and cover every wall with rows and rows of rails to achieve a full shop solution.

The width of the rails is up to you, but typically they range between 2-1/2" to 3" wide. The most efficient way to cut these parts is to start by ripping lengths of plywood that are a tad more than twice the planned width of the finished rails. For example, if your goal is rails that are 2-1/2" wide, rip plywood lengths that are 5" wide plus an 1/8" to compensate for the kerf of a standard saw blade. Each plywood strip will yield two rails. The next step is to tilt your saw blade to 45° to cut the strips right down the middle. The angle makes finding the exact centre a bit tricky, so use some scrap of the same width to dial in the positioning of your fence before going to town on your stack of rail blanks. It's not a big



Plywood Is Strong – Although solid wood is the strongest option for building a French cleat system, it can be expensive. Particleboard, OSB and MDF are too weak for all but a lightweight system. Campbell used quality 3/4" thick plywood for French cleat wall strips and hanging cleats, and a mix of 3/4", 1/2" and 1/4" plywood for the fixtures. He is very happy with it.

Cabinets on Cleats – Cabinets, with a few cleats on their backs, are great for a French cleat system. The system is strong enough for all but the heaviest cabinets and contents, and they can easily be moved when needed. If a cabinet and its contents are very heavy you can always drive a few long screws or lag bolts through the cabinet and into the studs once you know where you want the cabinet.



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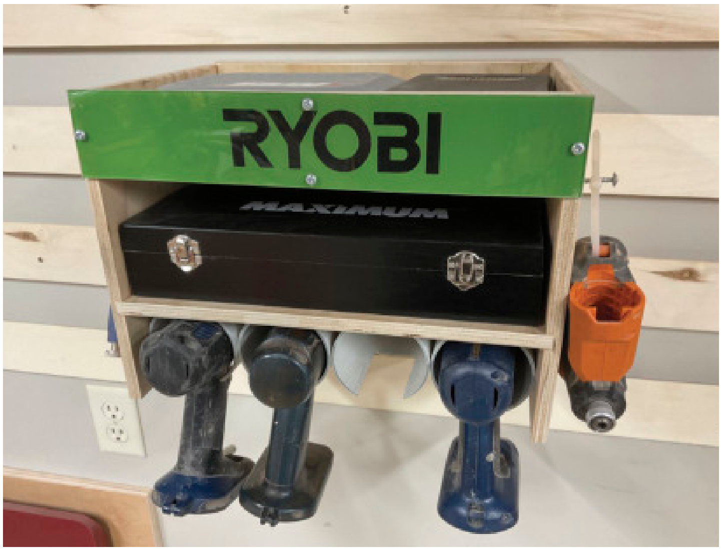
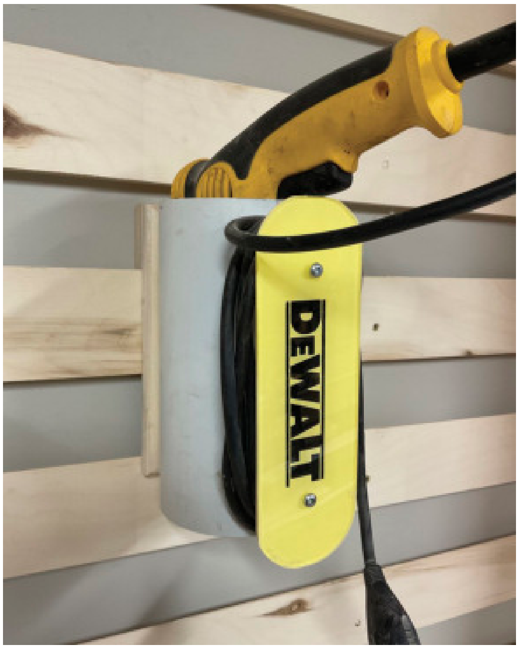
Hand Tools – Some areas of the shop need more refined organization than others. Hand tools are likely the best example of this. Campbell spent time organizing the tools he regularly uses, so they will be right as his fingertips and easy to grasp when he needs them.



Lots of Drills – Campbell has a few cordless drills that are kept in notched ABS conduit, where they're easy to grab and go. Some miscellaneous bits and other boring tools are kept directly above the drills.



Corded Drills – Campbell's corded drills are kept in a vertical piece of ABS conduit, with a cleat to wrap the cord around.

deal if the width of the rails doesn't end up being perfectly uniform because any differences usually won't create an issue.

To prepare for the installation use a stud finder to clearly mark all the stud locations.

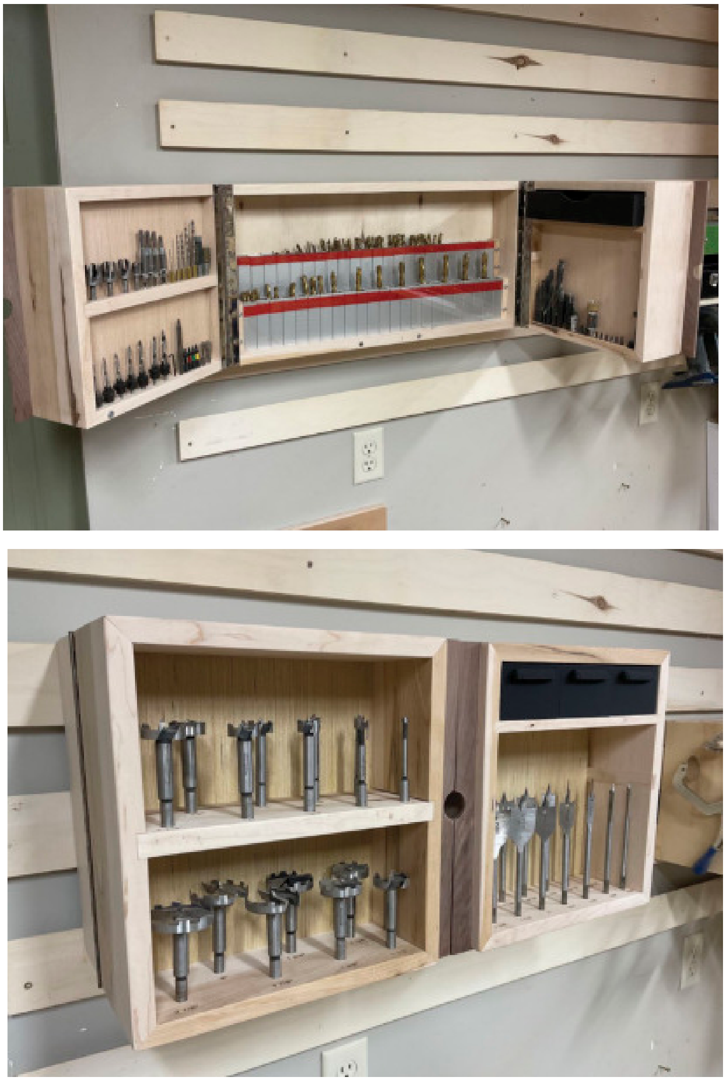
When you mount the rails on the wall, it's important to use screws that are long enough to anchor the plywood strips into the framing. Typical wall cladding on its own won't be enough to prevent the screws from pulling out under the weight of a significant burden. Screws that are 3-1/2" to 4" long will be sufficient to pass through the rail material, wall cladding and deep into the wall stud.

I prefer to start with the row at the bottom and work my way up. It's critical that the initial rail be perfectly level because all of the rails that follow will be referenced off this strip. Drive the first screw through the rail and into the stud closest to the mid-point of the strip. In addition to freeing up your hands to work, a screw in the centre will allow you to pivot the rail up or down to make fine adjustments. When you're satisfied the rail is level, drive more screws into the remaining studs to complete the installation.

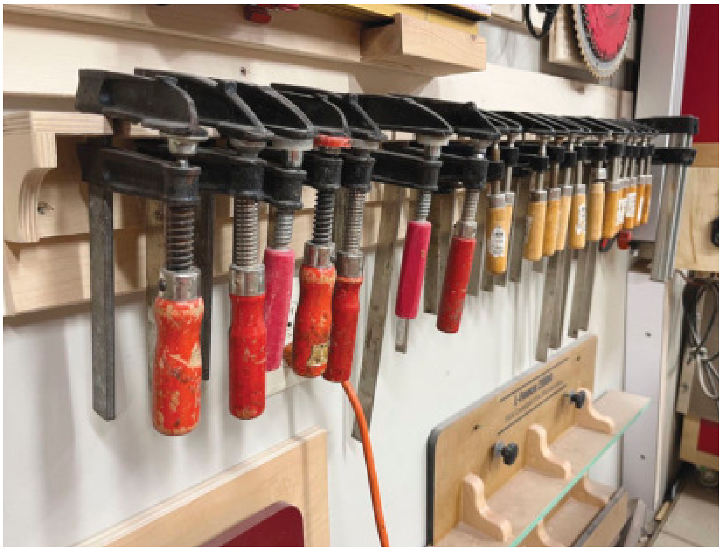
Now that you have your initial rail in place, the rest of the job will go more quickly. The spacing between the rails is entirely your choice, as long as the gaps are uniform. If the spacing is not the same between all your rails, you may discover that a cleat fits perfectly in one area but is too wide when you try to move the fixture to another location. The easiest way to achieve consistent spacing is to cut a couple of spacer blocks that are the same width as the gap you're looking to replicate. With the spacers positioned on the ends of the first rail, rest your next rail on top while you drive screws into the location of each stud. Repeat as you work your way up the wall.

Now for the fixtures

There are a few important factors to keep in mind as you design and build the fixtures for your storage wall. The most obvious consideration is to ensure the cleats are sized to fit comfortably within the rail spacing. I typically leave about 1/4" of play when I rip my



Multi-Layered Storage – A shop isn't complete without a wide range of sizes and types of drill bits. Campbell has made a dedicated cabinet to clearly store his bits (top). Both outer mini cabinets are hinged and can be moved out of the way to expose not only another layer of drill bit storage, but also more storage on the backs of the two outer mini cabinets (bottom).



Clamp O'Clock – Everyone has lots of clamps, but the trick is knowing how to store them so they can be grasped easily, not to mention be returned to their home once the glue has dried. Campbell made this simple rack that accepts the bar of each of his F-clamps.

cleats to width.

A few screws are usually all that are required to attach the cleats to the back of the fixtures. Just be certain the cleat is positioned near the top, so most of the weight is suspended below. If the cleat is mounted too low, the fixture could become top heavy, making it unstable on the wall.

To minimize the load on the rails, I always try to make the fixtures as light as possible without compromising structural integrity. For me, this usually means using 1/2" plywood wherever it makes sense. Even thinner 1/4" plywood is a good choice for non-structural elements, such as compartment dividers.

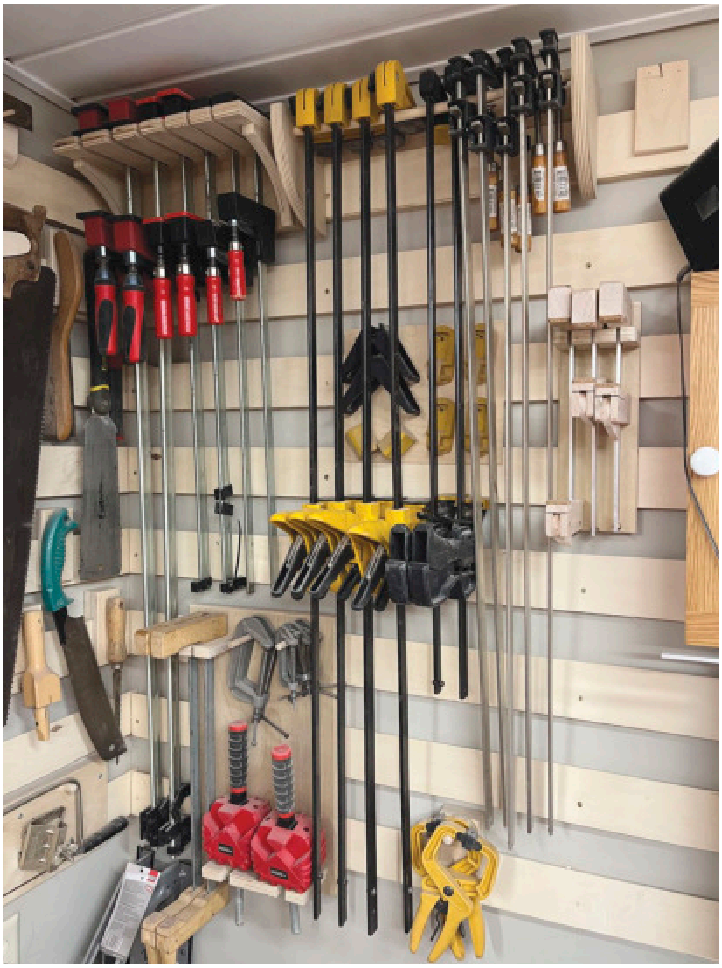
I've never had an issue with fixtures inadvertently becoming dislodged from the wall, but if this is a concern for you, the assembly can be easily locked in place by driving a screw just below the location of the support rail. If you ever need to relocate the fixture, simply back out the screw and lift the unit off the wall.

When designing fixtures for specific tools, consider building in some extra on-board storage for related accessories and supplies. This way you can bring the entire fixture to the bench while you work, knowing that everything you need to get the job done is close at hand.

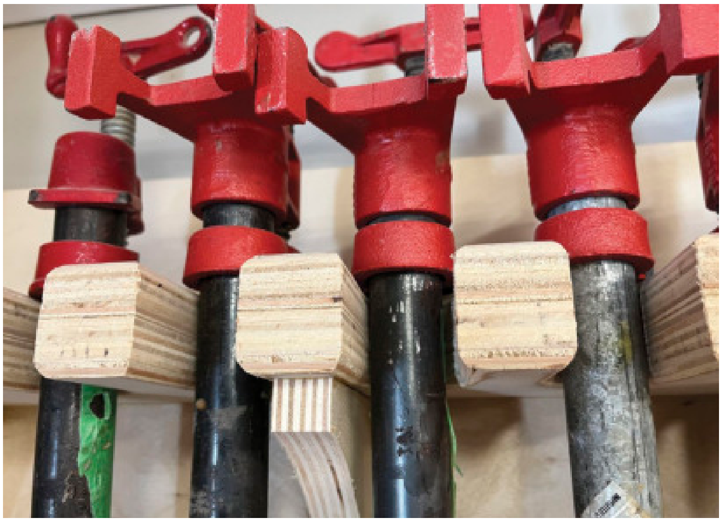
Now that you know all the basics, it's time to unleash your creativity and begin making some sawdust. To get you started, here's an overview of a few fixtures I've constructed for my shop.

Cabinets

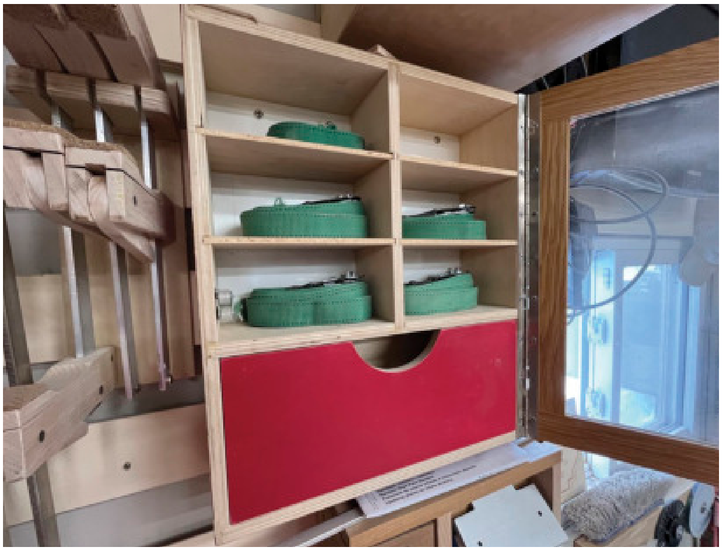
French cleats are an excellent choice for hanging tools and accessories on the wall but they're also a great option for mounting shop cabinets. In fact, all my workshop cabinets hang on rails so that I can easily reconfigure my entire shop layout whenever the need arises. My primary storage cabinets are stuffed full of heavy objects, so for these I took the precaution of using two cleats on the back of each unit to help distribute the load. I also used a frame and panel design to keep the weight to a minimum. The frames are 5/8" solid stock, surrounding 1/4" painted plywood inserts. The inserts on the doors are thin chalkboard material to provide a convenient place to make notes or write down critical measurements before they slip my mind. The cabinet backs are also 1/4" material but I added 3/4" solid structural supports in behind to beef up the connection with the cleats.



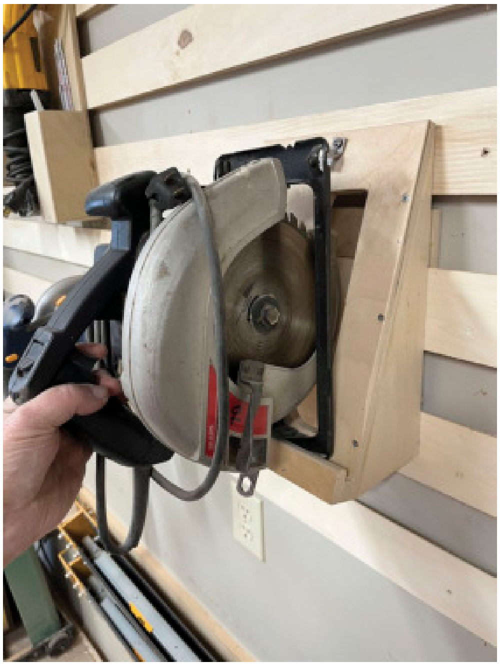
Lots of Options – Bessey K-Body clamps, trigger clamps and C-clamps can all be stored in a variety of ways. A little bit of ingenuity goes a long way when storing them.



Bar Clamps – The heaviest clamps in a shop are usually bar clamps. Notches in a horizontal piece of plywood, coupled with some plywood bracing, makes for a strong home. Campbell doubled-up the horizontal layer for added strength.



Cubbies for Some Clamps – Web clamps sit patiently in small cubbies until they're needed.



Circular Saw Storage – Campbell created a notch in the base of this fixture to accept the blade on his circular saw. A loosely attached Z-clip holds the far end of the base while the saw is being stored and can be rotated out of the way when he wants to use the saw.

Bench tools

The area of my French cleat wall directly above my workbench is reserved for small hand tools, rulers, squares, and other odds and ends that I reach for on a regular basis. The items I use most often are positioned within arm's reach at bench height. Those tools I use less frequently are relegated to a location higher up. At the very top I have suspended a LED light fixture from a rail, so it can be easily repositioned if I ever decide to relocate my workbench.

In this busy area of the shop, I strategically arrange as many small items as possible on the same fixture to make the most efficient use of the limited real estate available. For instance, most of my measuring tools are densely packed together on a single long panel and my screwdriver sets are grouped tightly together on just a couple of compact fixtures.

Drill storage

I have come to realize I'm obsessed with power drills; I have way more than I will ever need. Unfortunately, the irregular shape of these tools makes them difficult to hang on the wall.

The solution I settled on was to create holsters from 3" diameter ABS conduit. Using a jigsaw, I notched out an area at one end of the conduit to receive the drill handle, then I suspended the ABS from the bottom of a horizontal fixture board with a couple of screws. I added some compartments on top to store related accessories and sets of specialty bits.

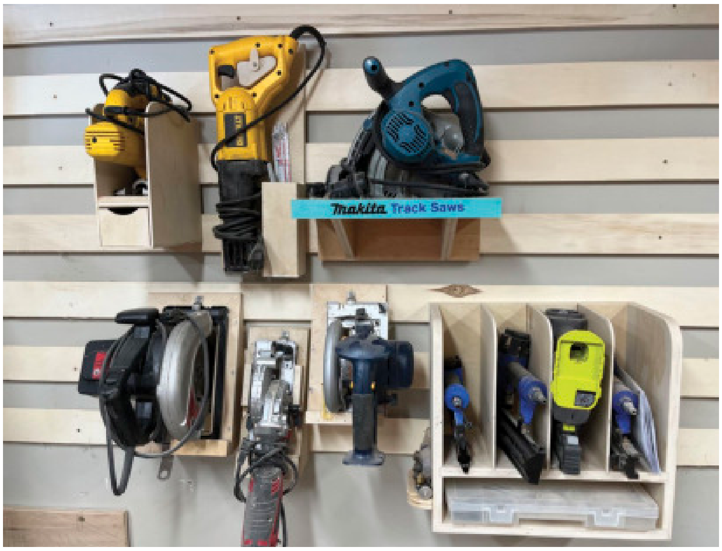
The long cords on corded drills add an additional challenge when it comes to mounting these tools on the wall. For the corded drills, I screwed a piece of ABS vertically to a backer board and attached a block on the front to wrap the cord around. A thin plywood plate on the face of the block prevents the cord from slipping off. I fancied up the face plates with some painted Plexiglas, but this was an unnecessary frill. I used the same configuration to store my rotary tools and oscillating multi-tool.

If you think I have way too many drills, then I'm even more ashamed to reveal my expansive collection of drill bits. With hundreds of small bits of every size, shape and configuration to deal with, it was a formidable task to come up with an organized storage solution that wouldn't take up an excessive amount of wall space. After giving the issue some careful thought, I decided the most efficient solution would need to involve a layered approach. This resulted in a cabinet design that has storage on both sides of the doors, in addition to the ample space within. The outside face of the cabinet doors has deep pockets that are used to organize my collection of brad point and spade bits. They're arranged in a staggered pattern to minimize the area they occupy. I had some room above the spade bits to create a compartment for a few 3D printed drawers that have become the home for my chuck keys and other drill-related odds and ends. These drawers could have just as easily been made from thin plywood. The inside face of the doors has a narrow area reserved for specialty items that don't take up much room, like counter sink bits and plug cutters.

The interior of the cabinet is filled with tiered rows of marked containers for every possible size of twist bit. The bit containers are made by cutting 1" hollow aluminum square stock into short lengths. The taller back row has some spacer blocks inserted in the bottom of the containers to elevate the end of the bits above the level of the container lip. I spray painted a narrow band near the top of each row to provide an area to mark the bit sizes with a laser engraver. Alternatively, you could use a label maker or permanent marker to achieve a similar outcome.

Clamps

The old adage that a woodworker can never have too many clamps is certainly true in my workshop. When it comes to storing clamps, the fixture designs were tailored slightly to fit each specific style, but the basic concept is generally the same for all. The fixtures all have some form of horizontal support that's used to suspend the head of the clamps. For my F-clamps, the support is notched along the edge to receive the neck of the bar. When it comes to my K-Body and quick-release clamps, I simply hook the heads over a long horizontal dowel. To accommodate my pipe clamps, I drilled out curved notches in the support rail that exactly fit the diameter of the round pipe shafts. Clamps tend to be very heavy, so all of the racks have corner bracing on the ends for added support.



Large Saw Selection – Campbell has stored each of his power saws so they are easy to grasp and return to their homes. His pneumatic nailers also have dedicated homes, with brad nail storage directly underneath.

My ratcheting web clamps required a completely different solution. For these I constructed a small cabinet with divided cubbies to store the individual clamps and a drawer at the bottom for the related accessories.

Saws

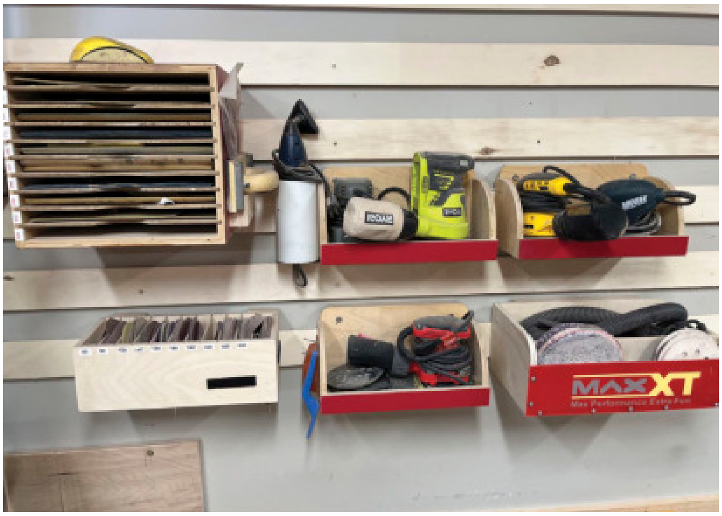
Like my collection of drills, the circular saw, track saw, reciprocating saw and jigsaw have irregular shapes that make them a challenge to hang on the wall.

The fixtures for my circular saws are all designed with an angled platform that includes a narrow opening to accommodate the protruding blade and blade guard. A slotted cleat captures the edge of the tool base at the bottom and a metal bracket pivots into position to hook over the baseplate at the top. To remove the tool, I simply swivel the bracket out of the way and lift the saw off the fixture.

My track saw sits flat because the blade fully retracts, so all that was required here was a supported horizontal platform with a lip around the perimeter to prevent the tool from sliding off.

The storage for my reciprocating saw consists of a flat vertical panel with a thick block attached near the top that's used to suspend the saw by the handle. The block is shaped to match the profile of the handle opening and a plywood catch rotates into position to hold the handle securely in place. A small plywood bin was added to one side to store extra blades.

To house my jigsaw, I created a narrow-walled corral with a gap on the inside of the base to receive the protruding end of the blade. The sides are thin 1/4" material to keep the weight down but the back and horizontal base are both beefy 3/4" plywood to provide the necessary structure for the assembly. Underneath I added a small drawer to store extra blades. Although they're not in the category of saws, I used a similar concept to create a series of storage bays for my collection of brad nailers. Rather than a drawer underneath, this unit has an open slot to receive a storage container full of supplies.



Sanders and Accessories – Trays with sides and fronts allow Campbell's collection of sanders to sit ready and waiting. Two dedicated boxes store full sandpaper sheets and sanding disks, while labels let him know where to find the grit he needs.

Sanding

The construction of the fixtures for most of my power sanders is similar to the design for the track saw – a horizontal platform with a lip on the edge to retain the tool. The only exception is the fixture for one of my random orbital sanders that has a particularly long handle and a cumbersome vacuum hose to deal with. For this tool I constructed a cleat-mounted box, large enough to accommodate both the sander and coiled hose. On the front of the box I added a slot for extra sanding pads and disks. A basic box attached to a cleat is an effective solution that can work for a number of applications around the shop.

Most of my sandpaper supplies are stored in a pair of boxes with rows of slots to separate the various grits. I marked the grit size on the edge of each slot, so I can quickly identify the particular sheet or disk that's required. The boxes are constructed from 1/2" plywood, with 1/4" dividers filling the interior.

Final thoughts

French cleats are just one option when it comes to hanging tools and supplies on shop walls, so you should consider all the possibilities before choosing the storage configuration that works best for you. If you do decide to give French cleats a try, just be forewarned that organizing your shop with these fixtures can become addictive, but that may not be so terrible if the end result is an adaptable and efficient shop layout that will serve you well for years to come.

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WORKSHOP WONDERS:

3 SPACE-SAVING ROUTER TABLE SOLUTIONS

Photos by manufacturers

Strapped for space? One of these compact benchtop router tables is sure to please.

BY CARL DUGUAY

While a router table isn't a must-have for all woodworkers, it can become a game-changer depending on what you're doing. One of the key advantages of using a router table is that you don't have to manage the weight and vibration of a handheld router. Instead, both of your hands are free to guide the workpiece. This is especially helpful — and much safer — when working with small or narrow stock which can be difficult and risky to rout by hand. With the help of accessories like push sticks, featherboards or jigs, these tasks become significantly easier, more accurate and safer on a router table.

If you're working in a small shop, floor space is often at a premium. A large, stationary router table might not be practical, especially if you use it only occasionally. In these cases, a compact benchtop router table can be a smart alternative. It offers much of the functionality of a full-size table but takes up significantly less space. When not in use, it can be easily stored away on a shelf, under a bench or even hung on the wall, keeping your workspace flexible and uncluttered. A benchtop router table typically costs less than a full-size table, making it great for hobbyists or beginners.

A benchtop router table somewhat limits the size of stock you can safely work with. However, for larger panels, you can switch to a handheld router. Benchtop tables are generally designed for use with compact (a.k.a. trim or palm) or mid-sized routers, as their lighter construction may not support the weight or torque of full-size, high-horsepower models. They may also lack advanced features found on stationary models, such as micro-adjustable fences, precision-lift systems and fully integrated dust collection. If you can live with some of these limitations, a benchtop router table can still be a valuable, time-saving addition to your workshop.

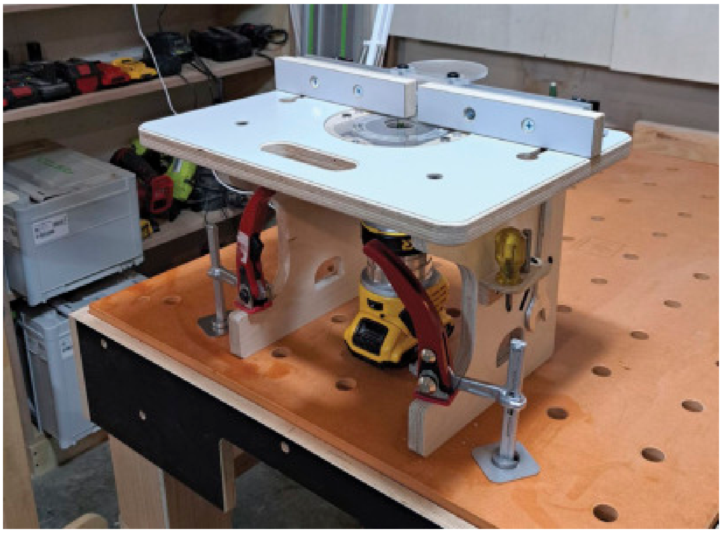
We shop-tested three different styles of benchtop router tables, each specifically designed with small shops in mind. Whether you're tight on space or simply looking for a compact, capable setup, we think you'll find one of these models a great fit for your workshop.

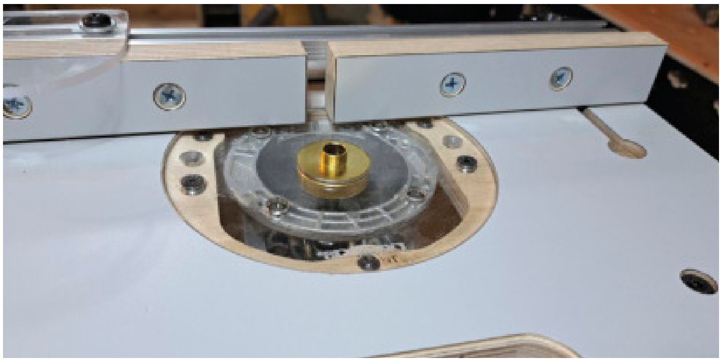
Veritas Table for Compact Routers

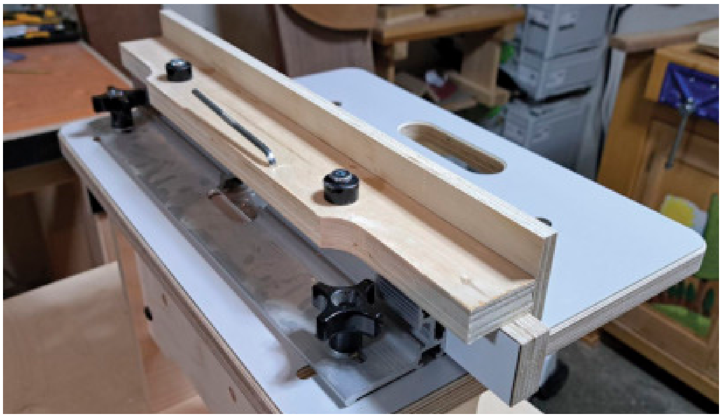
Leevalley.com $180.00 (requires the Veritas Compact Router Base Plate, $18.90)

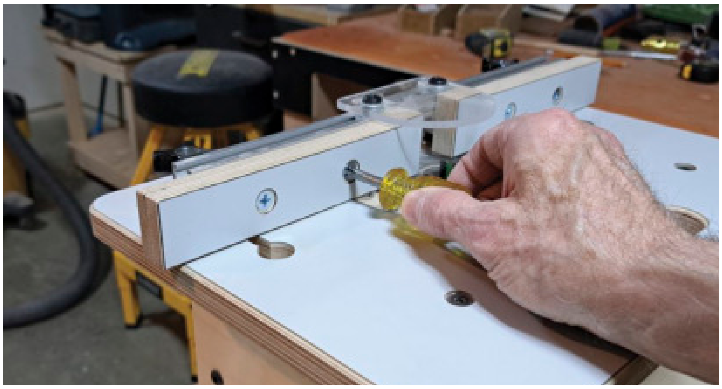
This is about the smallest router table you can buy. It comes disassembled but only takes a few minutes to put together. There are tabs on the front of the table that enable you to clamp the unit to a workbench, but I found it quicker and easier to attach a base to the table for this purpose.

You do need to purchase a separate mounting plate to use with this table, as the hole configuration in the plate must match the hole pattern on your router. Plates are available for five brands of compact routers, or you can buy a blank plate and drill matching holes for your specific model, which is easy to do. The one caveat is that the router base can't be wider than 4". Once installed, it's easy to adjust the plate so it sits flush with the tabletop. The baseplate accepts standard 1-3/16" template guides, which is a great asset if you do a lot of template routing.


Good Things, Small Packages – The Veritas router table is a compact, portable unit that's well thought-out. Just clamp it to your work surface and start routing.


Template Guides – Standard 1-3/16" template guides can be used with the Veritas baseplate, making even more operations possible.


Fence Height – It's not often that a higher fence is needed, but Duguay made a simple one out of plywood that attaches to the existing Veritas fence. A higher fence can help when routing some workpieces on their edges.



Easy Adjustments – The two halves of the Veritas split fence are easily adjusted in or out with a Phillips screwdriver.

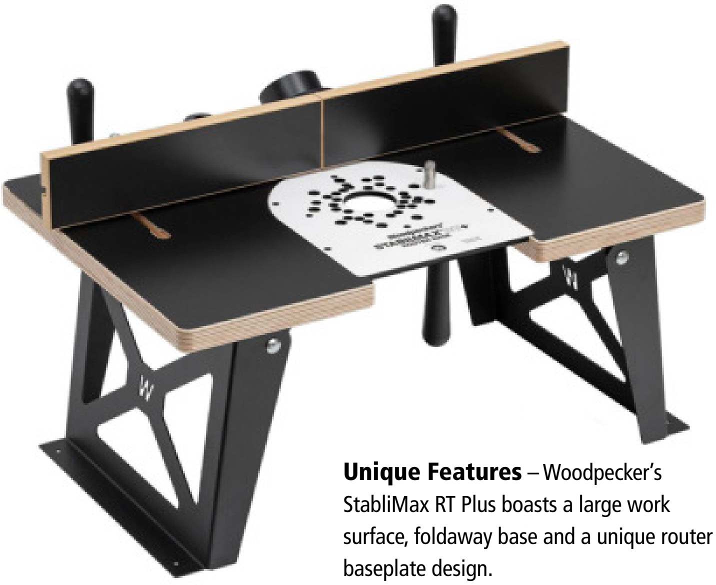
Dust Port – While the Veritas fence lacks a conventional dust collection port, one could easily make a dust port.

The low-friction, wear-resistant laminate surface measures approximately 11" by 15". The two sub-fences are each 7-1/2" wide and 1-1/2" high. Occasionally, however, I need a taller fence when routing wider stock. The safest solution is to either replace the existing fences with taller, shop-made ones or, as I did, attach taller sub-fences over the originals using the T-track on top of the fence frame.

The T-track also allows you to mount an adjustable stop block or featherboard. You get 7" of workspace from the centre of the router bit to the front of the table, which limits the width of stock you can safely rout. There isn't a standard dust port on the back of the fence, but you can add a Powertec-style dust port that accommodates any 2-1/2" OD dust port adapter and hose fitting.

To adjust the sub-fences, you need to use a Phillips screwdriver to loosen the retaining screws. For convenience, I attached a small bracket on the side of the table to hold the screwdriver, along with the starting pin and wrench. There isn't a mitre gauge slot on the tabletop, but you can make a fence to run along the front edge of the table — for example, when you want to mill across the ends of boards. The quickest way to change bits is to simply remove the clamps holding the table to your workbench, tilt it over and remove the router body from its housing.

Despite its diminutive size, I find the Veritas table to be stable and the fence easy enough to adjust for making precise cuts. The top has remained perfectly flat over the past nine months of use. I use it for routing small stock and narrow rabbets and grooves, switching to a larger router table when I need to use bigger bits or work with heavy, bulky stock.



Unique Features – Woodpecker's StabliMax RT Plus boasts a large work surface, foldaway base and a unique router baseplate design.

Woodpecker's StabliMax RT Plus

Woodpeck.com $349.99 US

If the Veritas router table feels a bit small for your needs, the StabliMax might just be the upgrade you're looking for. While it does come with a steeper price tag — about $500 CAD — it offers a compelling set of enhancements that more than justify the cost.

The StabliMax features a significantly larger and wider work surface, a more robust and refined fence system, a proper dust collection port and a removable mounting plate designed for effortless

Freehand Routing – The router mounting plate is easily removed from the router table, allowing quick changeover to freehand routing operations.

On the Level – It's easy to level the mounting plate with a hex wrench.

Woodpeckers®
STABILMAX RT
TRIM ROUTER BASE

Dust Port Is Standard – The Woodpecker's fence has an integrated dust collection port.

transitions between table-mounted and free-hand routing.

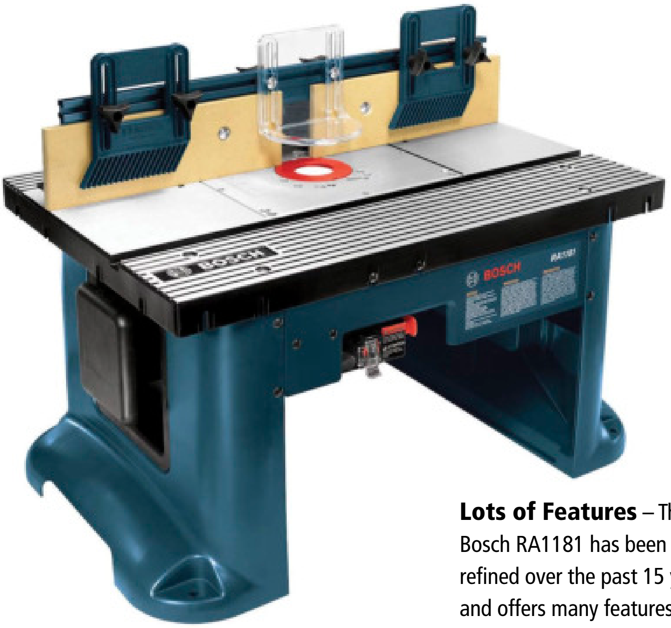
Like the Veritas, it arrives disassembled but goes together in no time — assembly is quick and straightforward. It also includes two Rack-It brackets, allowing you to conveniently wall-mount the table when not in use. What sets the StabliMax apart is its innovative snap-in mounting plate, which detaches easily for handheld routing. The plate sits flush with the tabletop and is compatible with standard 1-3/16" template guides.

One of the biggest advantages of the StabliMax is its ability to accommodate a broader range of compact and mid-sized 2-1/2 HP routers, compared to the Veritas. This flexibility means you can use a wider variety of router bits, expanding the scope of what you can accomplish.

The table itself measures a generous 15-1/2" by 24", giving you more than twice the surface area of the Veritas. The two 3" by 12" fences are also double the height, offering better support for taller workpieces. Constructed from a rigid 1" thick, laminate-coated, 17-ply Baltic birch top, the table provides excellent stability. Even though the tabletop is larger than the Veritas, you still only get 7" of workspace in front of the bit. As well, it doesn't include a mitre gauge slot, but the sub-fences are easily adjustable thanks to conventional knobs located at the rear of the fence frame. The fence itself includes a built-in dust port compatible with both 2-1/2" and 2-1/4" hoses.

One standout feature is the micro-adjustment knob on the fence, allowing for incredibly precise adjustments as fine as 1/64" over 7/16" of travel, with no backlash. It's a thoughtful addition that proves especially handy for fine-tuning cuts.

All in all, the StabliMax packs a suite of well-designed, practical features that are rarely found in other router tables, making it a high-value option. If you don't require the expansive footprint of a full-sized stationary router table, the StabliMax offers an excellent balance of versatility, precision and compact convenience in a smaller package.



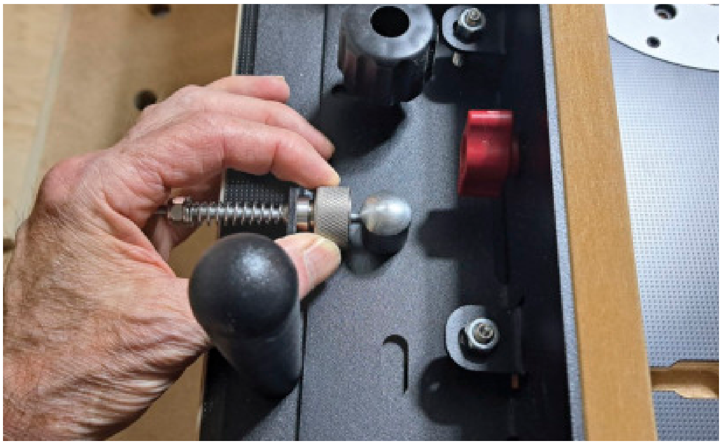
Lots of Features – The Bosch RA1181 has been refined over the past 15 years and offers many features.

Bosch RA1181 Professional

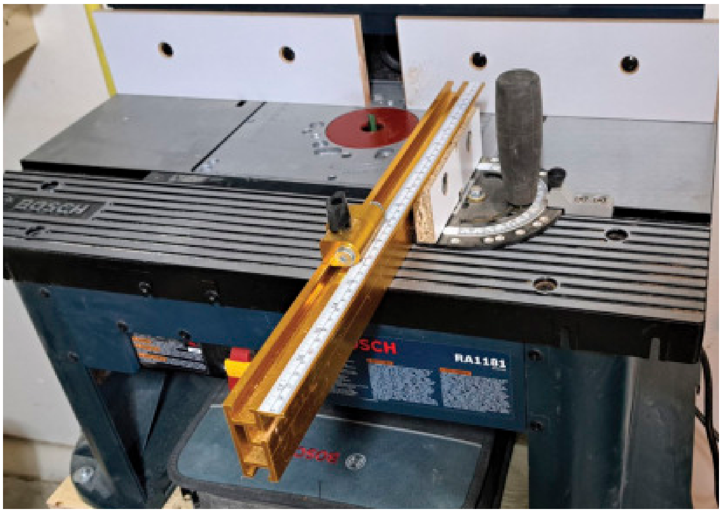
Boschtools.com $299.00

The Bosch RA1181 has been in production for almost 15 years and it's easy to see why. It offers nearly everything you'd want in a full-size benchtop router table.

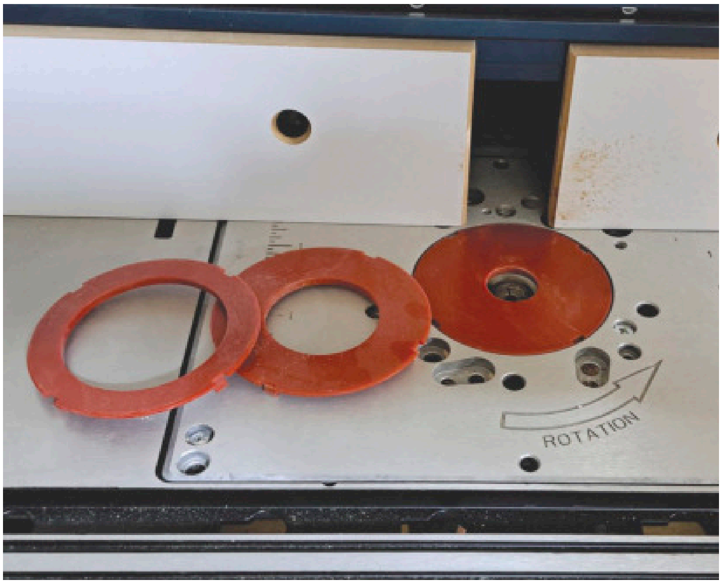
Assembly took me about an hour, including mounting the router and levelling the aluminum mounting plate. The table features an 18" by 27" aluminum top — slightly larger than the



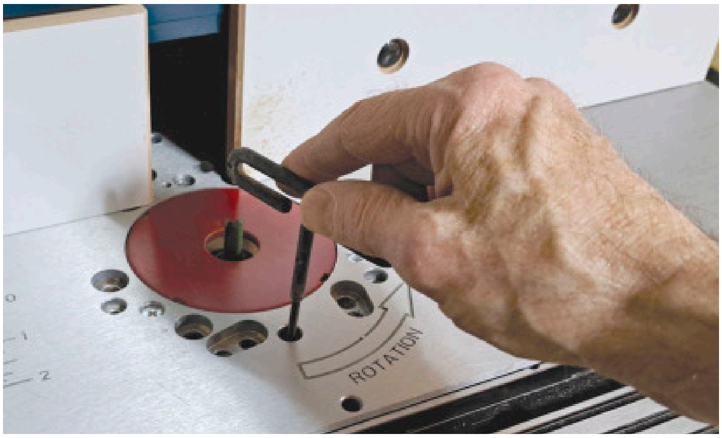
Easy Depth Adjustment – Micro-fence adjustment is a handy feature to have. It allows the user to adjust the depth of the fence to a very fine degree.



Mitre Gauge – The Bosch router table accepts a standard mitre gauge. The mitre gauge slot can also be used to guide jigs and other shop-made fixtures past the router bit.



Different Bit Diameters – A few different-sized ring inserts allow the user to adjust the opening to suit the diameter of the bit that's being used.



How High? – Above-table bit height adjustment is a nice feature to have in a router table.

StabliMax — mounted on a moulded plastic base. On either side of the base there's a cord wrap and a tool storage pocket for added convenience.

The RA1181 includes a front-mounted power switch and two integrated outlets: one for your router and one for a vacuum. It also comes with a 15-amp power cord, which should be sufficient for most standard routers.

The aluminum mounting plate is pre-drilled to fit a variety of fixed-base routers up to 2-1/4 HP. Note that it does not support compact routers. One of the most convenient features is the above-table height adjustment, which makes bit changes and depth adjustments quick and easy.

I found the top to be perfectly flat, with no noticeable deflection during use. Like laminated tops, the aluminum surface allows stock to slide smoothly. Unlike the Veritas and StabliMax, the RA1181 includes a standard mitre slot. Once clamped or bolted to a work surface, the table remains rock-steady with no discernible vibration. There's almost 11" of workspace in front of the bit — ample room for most routing tasks.

The fence system is another highlight. The 4" high by 12-1/2" long aluminum sub-fences with MDF faces offer excellent support, especially for taller stock. Adjustments are made via large, easy-to-use wing nuts. However, unlike the StabliMax, it lacks a micro-adjustment feature on the fence.

The RA1181 comes with dual featherboards to enhance safety and control. Like the StabliMax, the fence includes a dust port compatible with both 2-1/2" and 2-1/4" hoses. Three mounting plate insert rings are included. I did notice that the rings sit slightly below the plate surface, which can affect precision, especially on shorter stock. This isn't a major issue for longer or wider pieces. However, none of the rings support standard 1-3/16" template guides, which could be a drawback if you frequently do template routing.

If you can live with those limitations, the RA1181 is a solid choice. It's well-made, stable in use and offers a high level of functionality at a reasonable price.

Other full-size benchtop router tables that are popular among woodworkers include the Kreg PRS2100, the SawStop RT-DC and the Skil RAS900.

So, which benchtop router table should you buy? The answer depends on the type of work you do, your shop setup, your specific routing needs and your budget.

CARL DUGUAY
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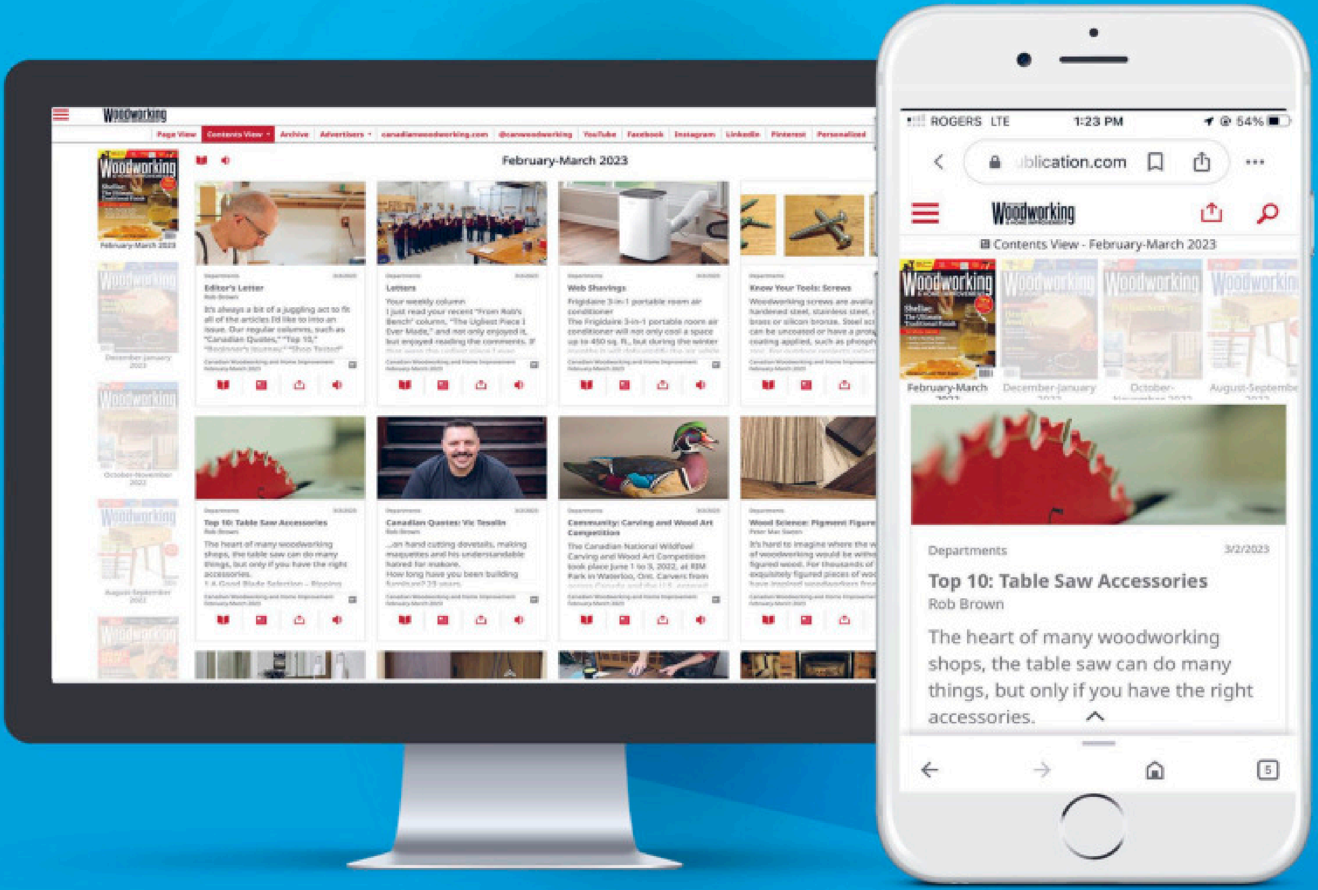
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Top 10: Table Saw Accessories

Rob Brown

The heart of many woodworking shops, the table saw can do many things, but only if you have the right accessories.

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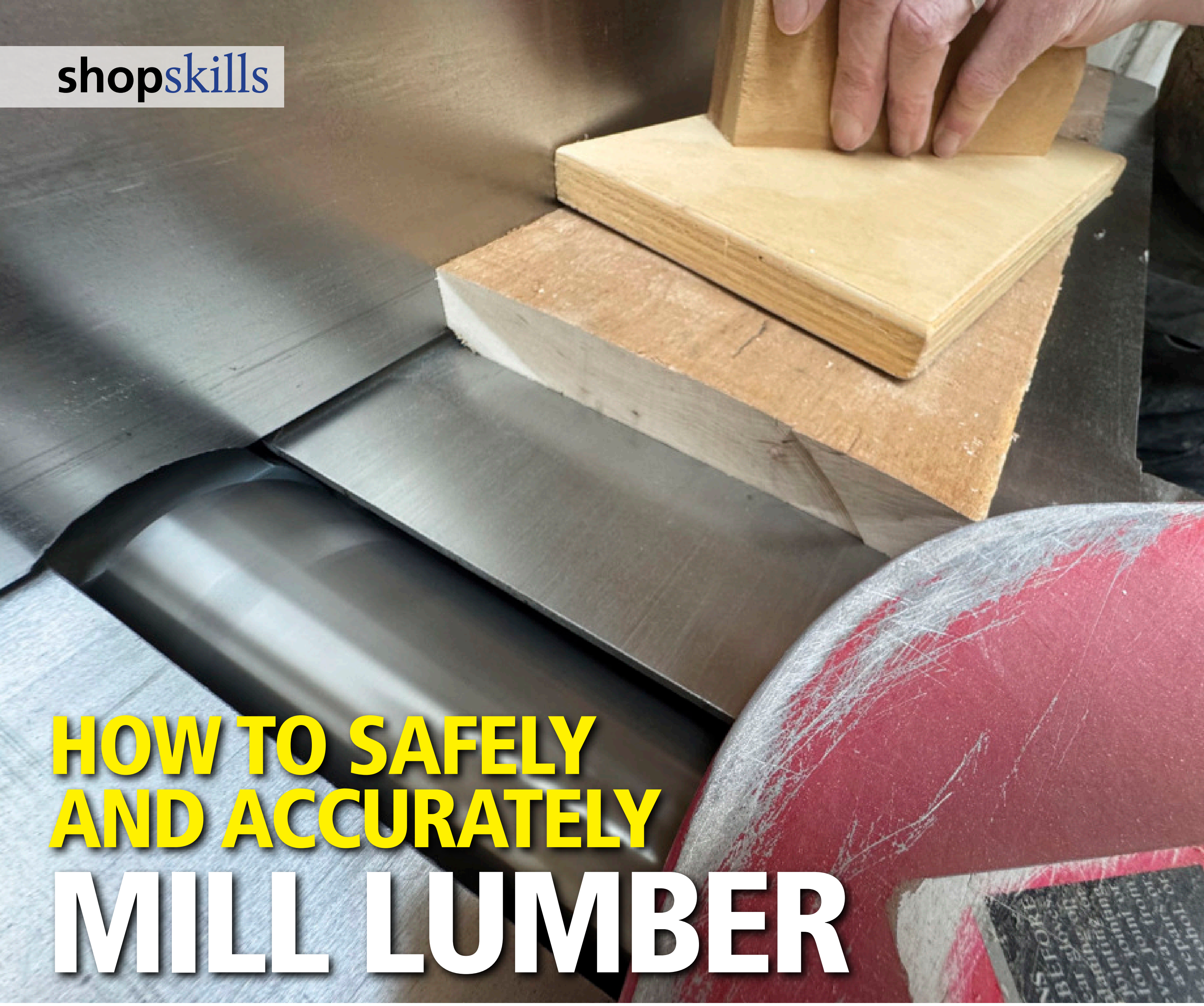


HOW TO SAFELY AND ACCURATELY MILL LUMBER

Milling rough lumber is an important skill to have. Set yourself up for success by learning the proper steps.

BY DAVID BEDROSIAN

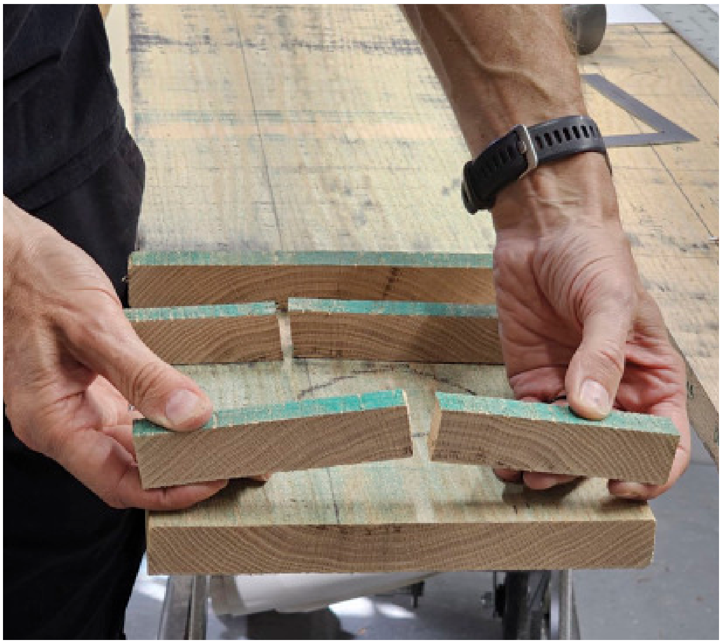
Milling lumber is a crucial step in furniture making. The goal is to machine the parts to the correct dimensions while at the same time keeping them flat, straight and square. The milling process often releases tension in the wood that may cause it to cup and twist. Additionally, as the wood is milled, it's likely to have some movement until the moisture content stabilizes, which can take a day or more. Starting with properly air- or kiln-dried lumber helps, as does letting the lumber acclimate in the shop for a week or more before milling. It's important to follow a process that maximizes the chances of success.

Part layout is an important first step

I buy rough lumber and always get more than I need for a project. This allows me to orient the various parts to give me the best grain, even if it means I end up with more waste. Before beginning the layout, I inspect the ends of the boards for cracks and checks. These may extend further in than is visible, so I typically cut off the end of the board an inch at a time until the offcut cannot be easily broken.

I now start the layout for the various parts, leaving them oversize in length by several inches to account for jointer snipe. I also leave them oversize in width to account for crook or twist that may

Photos by David Bedrosian (Lead Photo by Rob Brown)



Beware of Cracks – The ends of the boards may have hidden cracks and checks that can spoil a part. Cut off an inch at a time from the end until you're confident the crack has been removed.

develop as the parts are milled. I typically leave about 1/8" to 1/4" of extra width for every 18" of length of the part, more if possible. It's easier to rip a board that's too wide than to glue two pieces together. The challenge comes when I don't have quite enough board width to allow this much waste. Depending on factors like the species, how much other boards are twisting and warping, how long the workpiece is and whether I have the ability to make the workpiece a bit narrower or not means I might not leave quite that much extra width on some pieces.

Shorter parts can be combined into longer pieces to avoid waste due to snipe and to make them safer to run through the jointer and planer. They'll be crosscut to final length at the end of the milling process. It's possible to combine narrow parts into wider pieces, but they will not always remain straight when they're ripped to width later. I typically rip a test piece to see how it behaves, so I can estimate how much extra width is needed to joint the piece flat later.

Paying attention to the grain can make a significant difference in the finished look of a piece. For example, if I'm doing a frame and panel, I use straight grain for the rails and stiles and typically use cathedral grain for panels. Curved parts look best if the grain follows the curve. Sometimes the grain doesn't run parallel to the edge of the board, in which case the part can be laid out at an angle to get the best look. It's not uncommon for me to try different layouts several times before I'm satisfied with the look of all the parts.

Cut to rough length and width

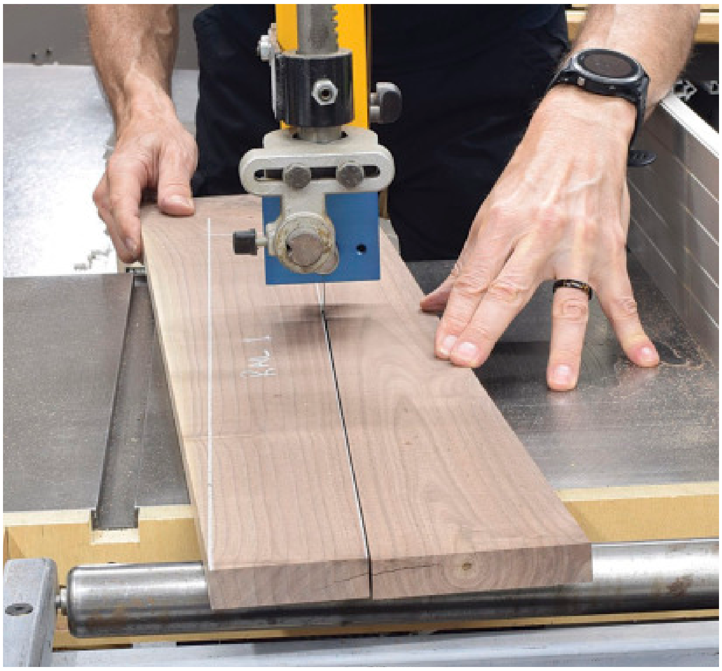
Long pieces of rough wood are heavy and hard to manage, so I prefer to cut them to length with either a jigsaw or a handheld circular saw. This also reduces the possibility of binding if the boards are twisted and you attempt to cut them at the table saw or chop saw. Depending on your layout, you may only be cutting partway across a board, which is easily done with a jigsaw.

Using a bandsaw is the safest way to rip the parts to width since there's no risk of kickback. This is especially true if the board is

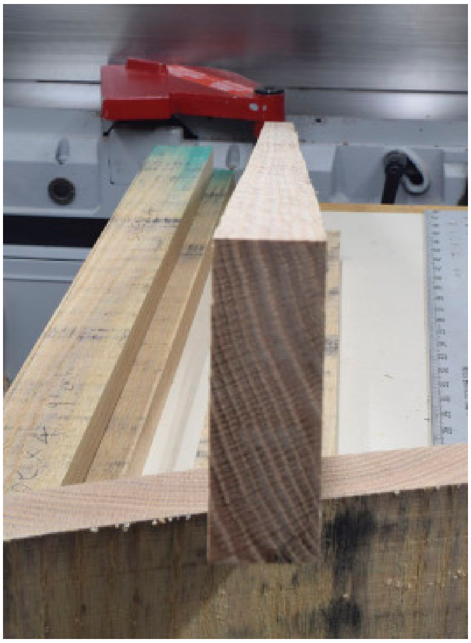
Part Layout – Bedrosian uses a cut list, a straightedge and a wide pencil to mark out each of the parts. Leave extra length and width to allow for planer snipe and wood movement. Pay attention to the grain orientation for each of the parts to give a harmonious look when the project is completed.

Bring the Saw to the Workpiece – A jigsaw, handheld circular saw or a hand saw are the safest ways to cut the boards to length.

Head to the Bandsaw for Ripping – There's too much chance of kickback when ripping rough lumber at a table saw, so Bedrosian uses his bandsaw instead. He uses the fence if the edge of the board is relatively straight and the cut is parallel to the edge.



Follow the Grain – In some cases, as with this walnut board, the grain is angled. To get the best-looking part, Bedrosian draws the cutline parallel to the grain and follows that line with a freehand cut at his bandsaw.



Look for Problem Boards – Cutting the boards to width releases tension within the lumber that may cause warping. This typically isn't a problem for shorter boards, but longer boards need inspection. Bedrosian checks for excessive twisting or cupping that could result in the part being too thin after jointing and planing.

cupped or twisted and won't sit flat on the table. I typically reference off the bandsaw fence, but I'll make a freehand cut if the edge isn't straight or my layout line isn't parallel to the edge of the board. Depending on how straight I am with the cut, I may make a pass or two at the jointer before I use the fence to cut the opposite edge. The parts are oversize in width so it's okay if the cut isn't perfectly straight.

As the boards are cut, tensions are released. This may cause them to twist, bow or cup. This usually isn't a problem for shorter boards, but longer boards may end up too thin after jointing and planing. It may be possible to rip the piece in half or thirds before machining to maintain the desired thickness. They'll be glued together later in the same orientation after they're milled. If this won't work, I scrap the piece or use it for shorter parts. It's better to be conservative than to end up with an unusable part.

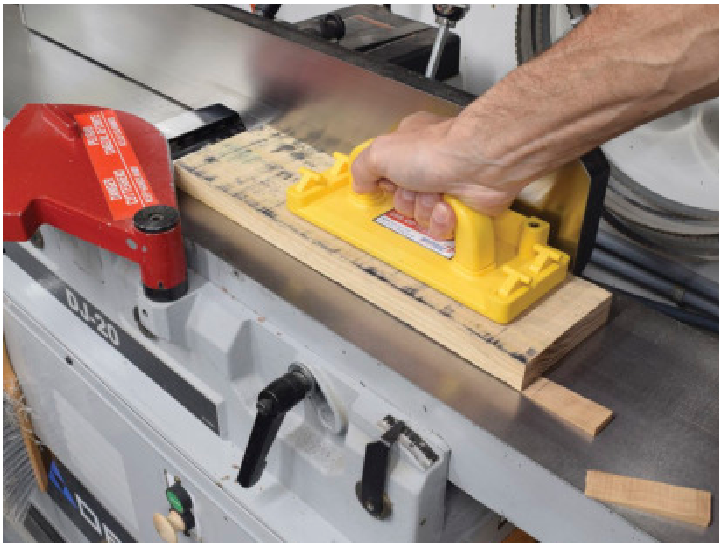
Before moving on to jointing and planing the faces which will remove any identification marks, there's one final step. To help me keep track of each part, I transfer any markings to the ends of each board.

Joint one face flat and plane the opposite face parallel

With all the parts rough cut, it's time to flatten one face at the jointer and then machine the other face flat and parallel to the first face at the planer. Rough lumber will likely have some amount of cup, twist or bow. If a board twists more than about 1/8" on the jointer table, I use a trick I first learned from my friend Ramon Valdez, a furniture maker in New Mexico. I place a small wooden wedge under the high corner of the trailing edge of the board. This allows me to split the twist in half so I can get the maximum thickness. For bowed boards, place the bowed side up so both ends are resting on the infeed table, which keeps it from rocking. Use a wedge as needed, if the board is also twisted. For thinner parts, be careful not to apply too much downward pressure on the infeed side or the bow will spring back after jointing.

I set my jointer for a relatively light cut (about 1/16"), so it typically takes multiple passes to get a flat face. I don't have to worry about grain direction for most boards, since I have a spiral cutterhead. If you're using a straight knife jointer, read the grain and take light passes to minimize tear-out. If chipping is occurring, rotating the board end-for-end will often fix the problem. If you're milling a difficult species like sapele, which has reversing and interlocking grain, this can be a challenge.

After jointing, run each part through the planer to make the opposite face parallel. I typically remove 1/16" of wood or less



Wedge Away Any Twist – It's not uncommon for rough-sawn lumber to be twisted, causing it to rock on the infeed table. To stabilize the board, Bedrosian uses a small wooden wedge under the high side. He inserts the wedge only far enough so the twist is the same between the front and back. This equalizes the amount of wood removed from both sides of the board, allowing him to get the maximum thickness. Bedrosian pulls out the wedge before it gets to the cutterhead.

Plane Parallel Faces – After jointing all parts flat on one face, they're run through the planer to make the opposite face parallel. Bedrosian aims to leave each piece about 1/8" thicker than needed in case they warp. Bedrosian previously marked the end of each part so he can keep track of them as they're milled.

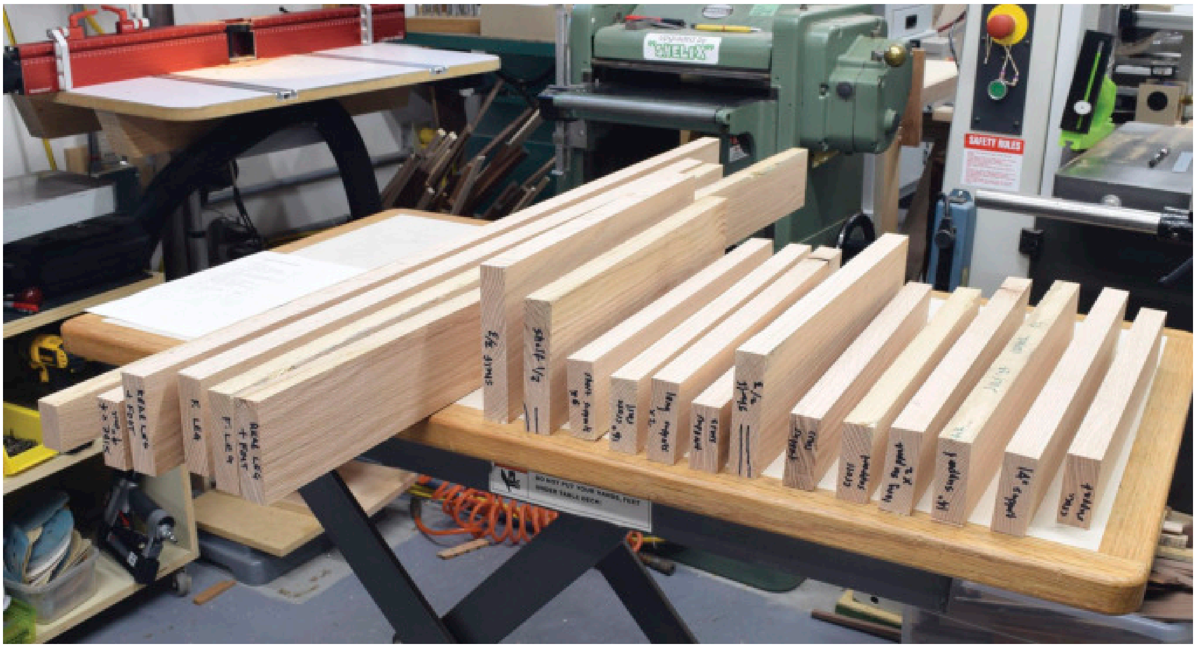
with each pass until I get a flat surface, though that also depends on the density of the species, the width of the board and how sharp your planer blades are. My goal is to remove all the milling marks without getting down to the finished thickness.

I then turn the parts on edge with an inch or more between them and let them acclimate for a day or two. Some parts will warp as internal tensions are released during the milling process and they may continue to move as the moisture content equalizes with the surrounding air. Leaving extra material lets me follow up with a second pass at the jointer and planer to make them flat again and to get them to their finished thickness. If I'm not going to be using the parts for a week or more, I'll delay the final thicknessing until I'm ready to use them.

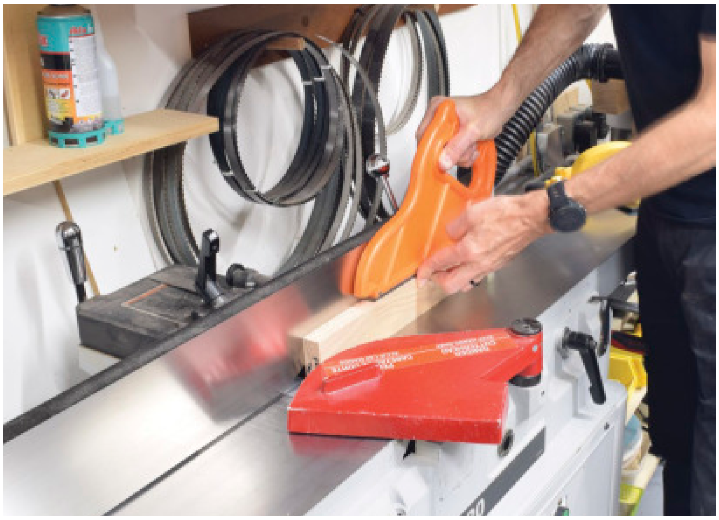
If the boards are considerably thicker than the finished thickness, I make multiple passes at the planer or use the bandsaw to remove excess wood. Either way, it's best to remove about the same amount of material from both faces. This helps to balance out the tension in the board, which lessens the chance of warping. Stop before getting to the final thickness and let the parts acclimate on edge for a day or two as described above.

Joint one edge square and machine to finished width

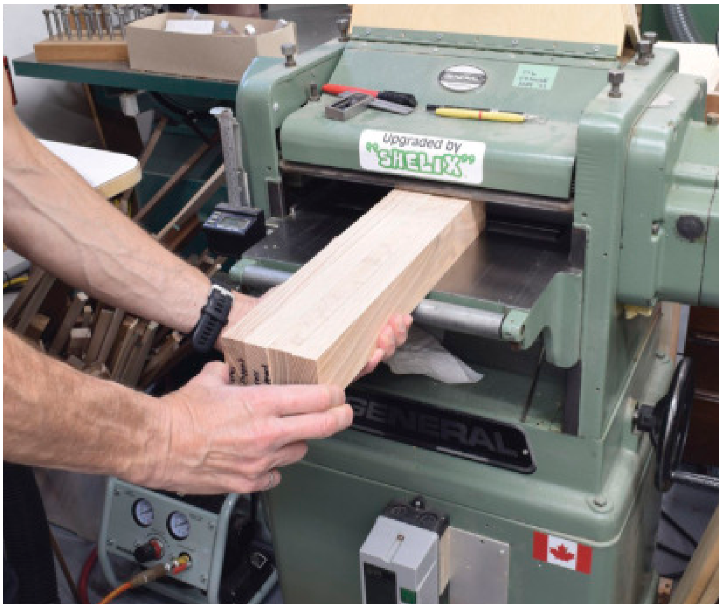
With both faces flat and parallel, it's time to joint one of the edges. I typically pick the edge that's the straightest, but if the wood looks nicer near the opposite edge, I'll start there. Some woodworkers start



Let the Parts Move – The boards may not be flat after jointing and planing. Even if they are, the boards may still warp as the moisture content equalizes. To account for this, Bedrosian either stickers the boards or he turns them on edge and lets them sit for a few days or longer for parts that won't be used immediately. A second pass of jointing and planing will flatten the parts so joinery can be cut.



Joint an Edge Square – Bedrosian waits to plane a square edge until both faces have been surfaced. This allows him to run the part in either direction to minimize tear-out.

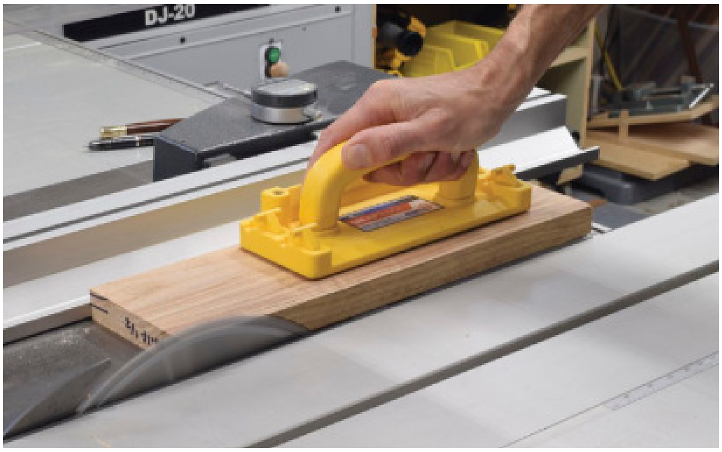


Plane Narrow Parts Together – Bedrosian groups narrow parts together and planes them all at once so they're all the same width. He squeezes them tightly as they enter and exit the planer so they don't shift.

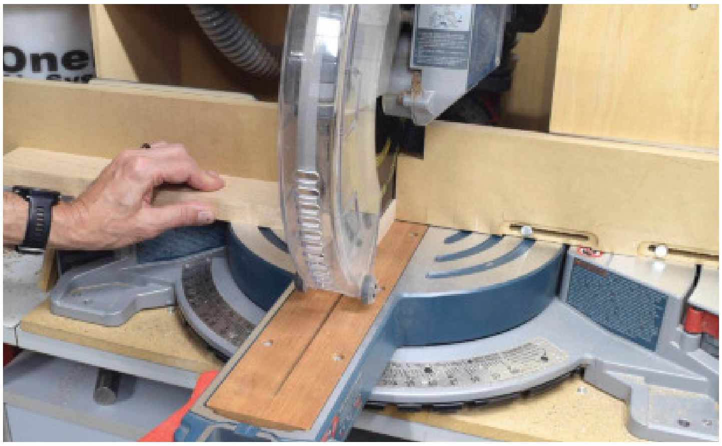
with the edge that has a slight hollow in the centre, so the board doesn't rock while it's being jointed. Be sure your fence is square to the outfeed table and take light passes. If you get tear-out, turn the board around and run it in the opposite direction. Check to be sure the entire edge has been surfaced before moving on.

You can use your table saw or bandsaw and planer to take the parts to their finished width. For narrow parts (between 1/2" and 3") and I rip them 1/16" over width at the bandsaw and then use the planer to take them to the final width. If I have multiple parts that are the same width, I'll group them together and run them through the planer all at once to ensure they're identical.

Wider parts get ripped at the table saw with a sharp rip blade. This leaves a reasonable surface which, if needed, can be cleaned up with a hand plane or a very light pass at the jointer.



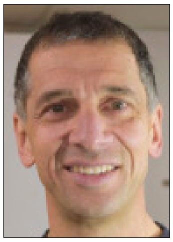
Rip Wider Parts at the Table Saw – The table saw can be used to rip parts that are too thin or too wide for the planer. If you're ripping narrower workpieces from stock that is much wider, a splitter will help prevent pinching on the outfeed end of the blade. Also, retracting the rip fence so it doesn't extend past the end of the blade will prevent binding and possible kickback if the workpiece warps as it's cut. If in doubt, it's always safer to rip at the bandsaw and then clean up the edge at the jointer or with a handplane.



Crosscut to Final Length – The last step is to square up one end of each piece and then cut it to length. Bedrosian typically does this using his sliding table saw, but a chop saw or crosscut sled on a cabinet saw works just as well.

Cut to finished length

The final step is to crosscut the pieces to their finished length. I do this at my sliding table saw using a stop to ensure each piece is the correct length. A crosscut sled on a cabinet saw or a chop saw can also be used. Make a test cut to ensure your setup is cutting square. If needed, use a backer board to prevent blowout of the wood fibres.



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A BETTER PLACE FOR YOUR SAWS

Photos by Steven Der-Garabedian Illustration by Len Churchill

Organize your favourite hand saws with this customizable stand.

BY STEVEN DER-GARABEDIAN

One of my pet peeves is having metal tools touch other metal tools, whether they're chisels or, in this case, hand saws. It was time for me to rectify this situation. While I have both North American and Japanese saws, I gravitate to using my Eastern saws. I have a pair of dozuki saws for cutting dovetails and a double-edged ryoba for both rip and crosscuts. I also needed to find a home for my flush cutting saw.

From the ground up

I wanted to have a stand that could sit on the end of my bench but could also be hung on a wall when I needed a clear top. I have a pair of veneer saws and some saw guides that could be housed in a drawer. I didn't want anything that looked heavy or only had straight lines, nor resemble the Studley Toolbox. Something nice and simple.

After measuring my saws for both length and width I went to my local wood supplier and picked out a pre-milled piece of mahogany that was 8' long by 7-1/2" wide and 3/4" thick. I also picked up a small piece of black limba for the drawer parts that I thought would add some contrast.

More milling

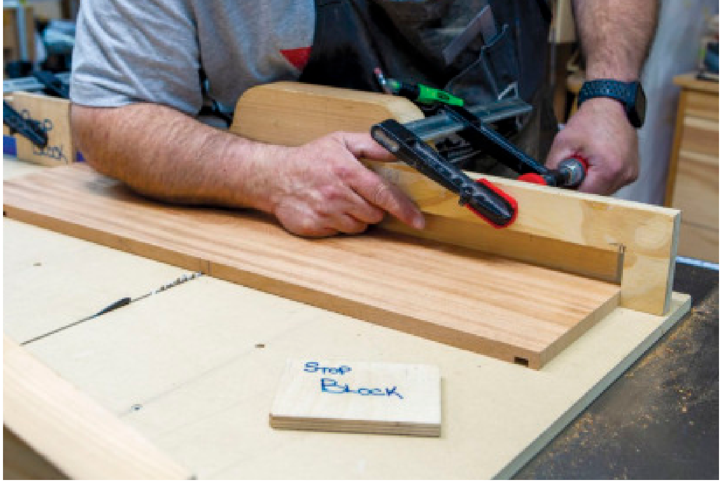
I don't like using standard thicknesses for projects as 1/2" and 3/4" are what mass producers' machines are set for. Changing dimensions by even 1/16" will make the work more pleasing to the eye. For the sides of the stand I milled the pieces to 9/16" thick by 7" wide and 27-3/4" long. These will be cut with a sweeping curve from 3" at the top to the 7" width just above the drawer. The other parts for the carcass were all milled to 7/16" thick. Finally, the drawer parts were milled to 5/16" thick except the bottom which I thinned down to 3/16".

In keeping with the simple theme for the stand, I opted for grooves in the side pieces to hold the cross members. I left these pieces slightly wider than the listed dimensions as these would be trimmed after one of the dry-clamping runs. The grooves are easier to cut with the side pieces still in rectangular form rather than with the curve sliced out of the front.

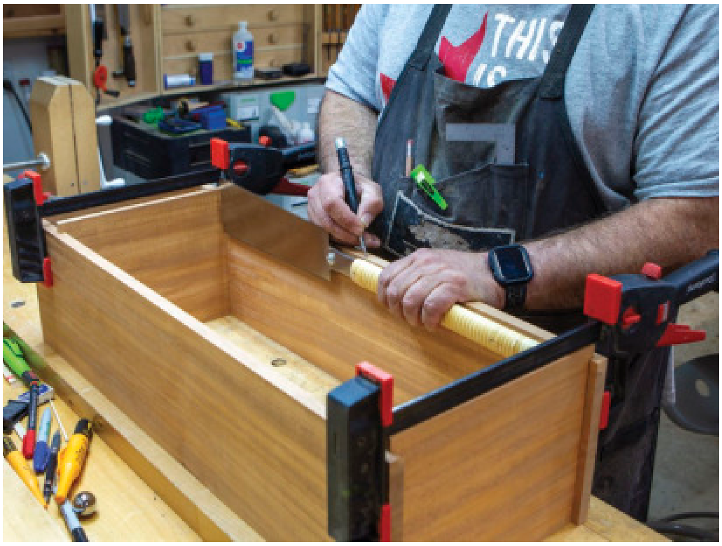
Stops, stops and more stops

In order to make sure the cross pieces were perfectly horizontal, I used my crosscut sled and a pair of stops. I don't have a dedicated sled for a dado stack, and since the grooves are only 7/16" wide, I went with a cross cut blade and just incrementally moved the pieces between the stops. The top and bottom grooves start at 3/8" in from their respective ends and I cut these in both pieces with this initial setup. All the grooves are 1/4" deep. After taking a rough measurement of my longest saw I added the next groove 2-3/16" from the top of the bottom grooves. This creates the space for the drawer.

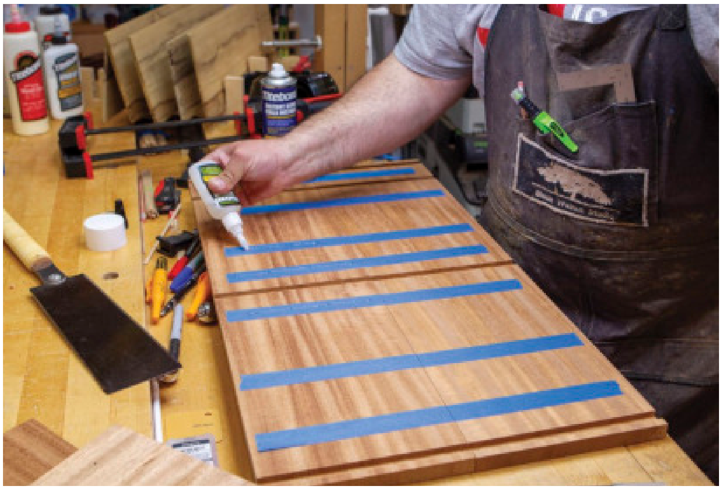
Next, dry assemble the stand and centre your longest saw, and a small gap, in the opening. Mark the bottom of the handle and



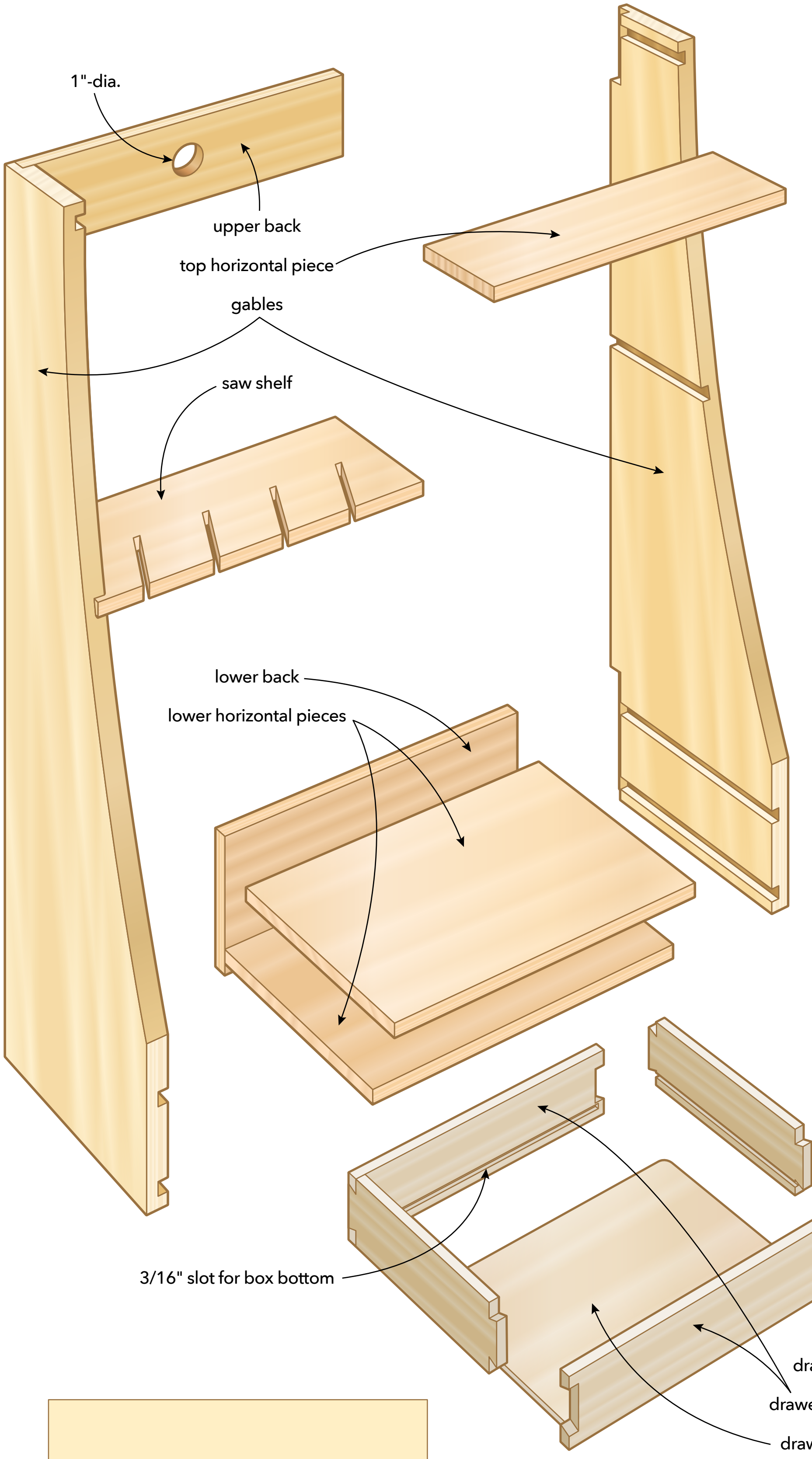
Accurate Stops – Der-Garabedian usually uses his standard stop block when setting stops on his crosscut sled, but if the end of the workpiece is too far away from the blade, he uses a shop-made L-stop. Here, he sets up a stop to machine one end of a pair of dadoes.

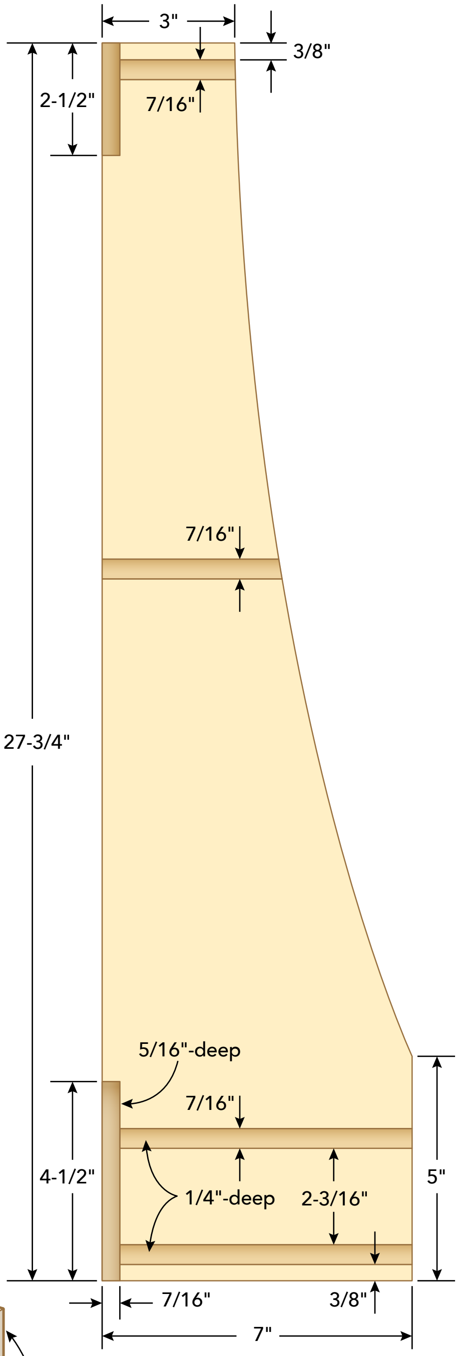


Shelf Height – The main opening of the case needs to be a bit larger than the length of the longest saw. Here, Der-Garabedian marks where the upper surface of the saw shelf is located on the gables.

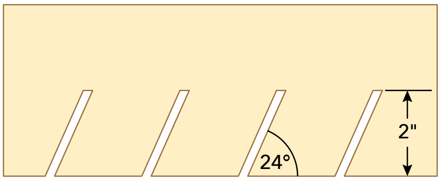


Temporary Bond – So the two gables can be easily machined to be equal, Der-Garabedian chose to apply tape to a few areas of the mating gables, then add a few drops of CA adhesive to one side and some accelerator to the other side, and bring the two halves together so they could be machined. The parts can be pulled apart once the curved front edge has been cut on both pieces.


1"-dia.
upper back
top horizontal piece
gables
saw shelf
lower back
lower horizontal pieces
3/16" slot for box bottom
drawer side
drawer front/back
drawer bottom


3"
3/8"
2-1/2"
7/16"
7/16"
27-3/4"
5/16"-deep
7/16"
4-1/2"
1/4"-deep
2-3/16"
5"
7/16"
3/8"
7"

GABLE DETAILS



SAW SHELF DETAILS

Materials List

Part	Qty	T	W	L	Material
Gables	2	9/16	7	27-3/4	Mahogany
Upper Back	1	7/16	2-1/2	9-1/2	Mahogany
Lower Back	1	7/16	4-1/2	9-1/2	Mahogany
Lower Horizontal Pieces	2	7/16	6-7/8	9-1/2	Mahogany
Saw Shelf	1	7/16	3-3/4	9-1/2	Mahogany
Top Horizontal Piece	1	7/16	2-7/8	9-1/2	Mahogany
Drawer Front and Back	2	5/16	2-3/16	8-15/16	Black Limba
Drawer Sides	2	5/16	2-3/16	6-3/8	Black Limba
Drawer Bottom	1	3/16	To	Fit	Black Limba

HardwareList

Name	Qty	Details	Supplier
Insert Knob	1	Part# 05H36.23	Lee Valley Tools

create another mark 7/16" down. Cut this once more on the table saw using a pair of stops. Due to the length of the side pieces, I needed a bit more reach than the fence the crosscut sled provided. Using a stop shaped like an "L" did the trick.

Gracefully curved

Even with a sharp blade, some woods end up with whiskers, especially during crosscuts. A shooting board and hand plane, or even some sandpaper on a flat block, will quickly remedy that situation.

In order to cut identical curves in both side pieces, you could opt for a template and a bearing pattern bit on the router, but this creates a lot more work, especially for only two pieces. Instead, I temporarily fastened both sides to each other with masking tape and small drops of CA glue. The trick is to make sure that both sides have the tape lined up, so you don't adhere the two parts together for good.

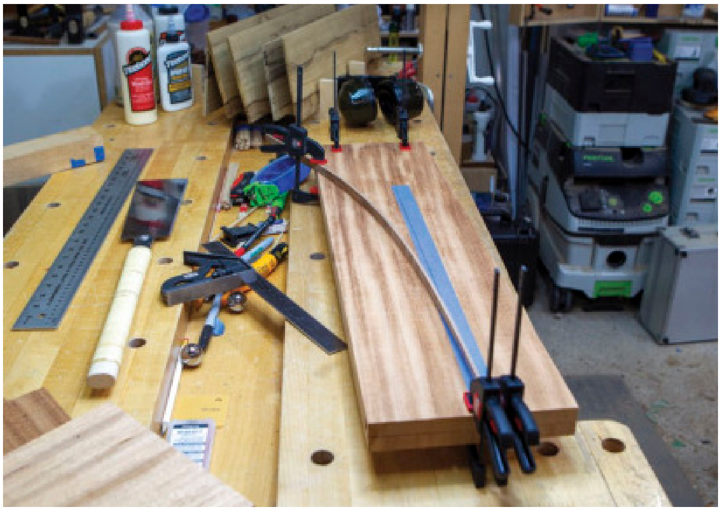
Line up the sides, back to back, and run tape across both inside faces. Cut them with a sharp knife to separate them. Next, apply some CA glue to one side and spray accelerator on the other. Close the book, so to speak, and press the two sides together for a few seconds.

Using a thin piece of wood, clamp one end 3" in from the back at the top and the other end at a point 5" up from the bottom. Trace this line and, using the bandsaw, cut the curve into the sides. Don't toss the waste pieces into the wood pile just yet. To clean up the bandsaw marks, a curved bottom spokeshave works well. A spindle sander or even sandpaper on its own will also do a good job.

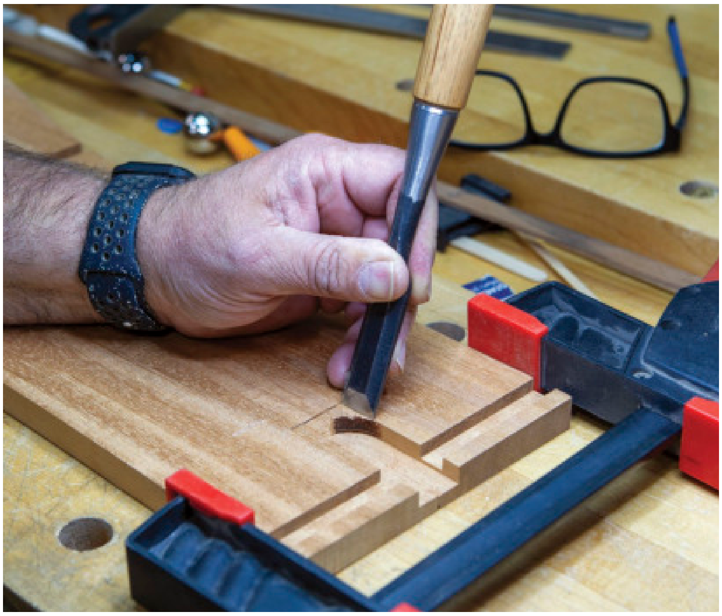
Smooth, Even Curves – A spokeshave will smooth the curved edges left by a bandsaw. Since the two gables are fixed together, the curves will match.

Back support

Since one of the requirements of the stand was to be able to hang it on a wall, the backs needed to be inset into the sides. I used a


Draw a Curve – With the gables temporarily fixed face to face, Der-Garabedian uses a thin piece of wood and clamps to help him draw a curved line on the gables so they can then be cut.

Rabbets for Backs – Using a rabbet bit in a router table, Der-Garabedian machines rabbets in the gables to accept the upper and lower backs.



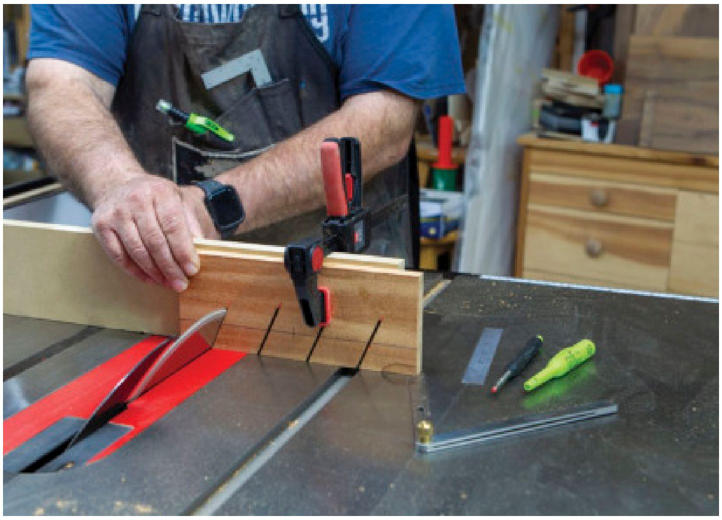
Square Things Up – With the gables clamped together edge-to-edge, the ends of the routed rabbets can be squared up to accept the mating workpieces.

rabbeting bit on the router to cut a stopped rabbet 7/16" deep and 5/16" high. To test my setup, I used the offcuts from the previous step. The top back piece is 2-1/2" wide and the bottom is 4-1/2" wide. The top also gets a 1" hole drilled in the middle, but offset slightly to the bottom. Stop the rabbets 1/4" shy of each width, as these will be squared up using a chisel.

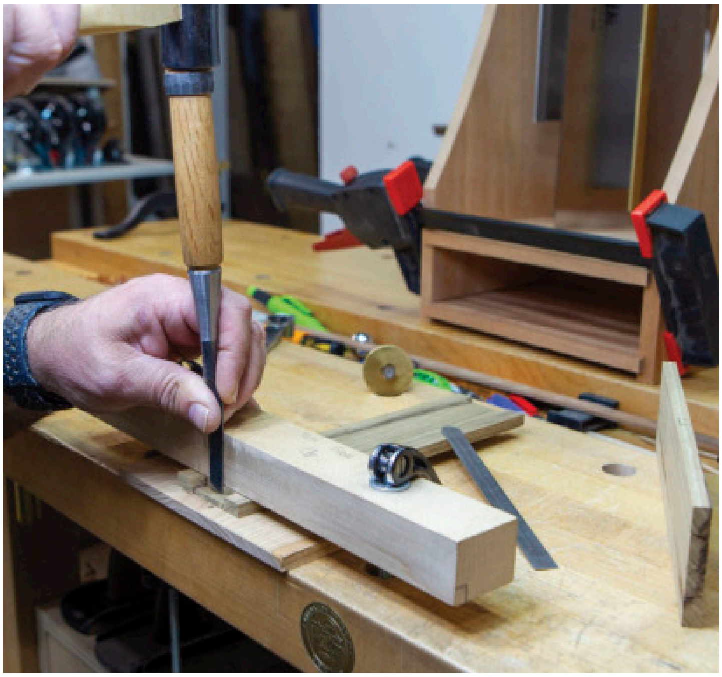
After squaring the rabbets, dry fit the backs onto the carcass and butt the horizontal shelves to them — all except the middle one. The middle saw support shelf is flush with the back. Now trim the horizontal members to their final widths. Good designs don't always have all of the pieces flush. I ended up leaving mine 1/4" longer than the front of the sides.

An angled profile

If you have a lot of saws to house in your stand, you could fit them closely with slots straight in. However, I thought giving them a slightly angled profile, 24° in my case, was a pleasing change. Again, using one of the waste offcuts, lay out what works best for your saws and taste. The cuts, which reach 2" from the front of the cross piece, are approximately 3/16" wide, which is 1-1/2 times the width of a typical table saw blade.



Saw Slots – Although Der-Garabedian chose to make his saw slots in the saw shelf angled, there's nothing wrong with cutting them perpendicular to the front edge of the saw shelf.



Cut Dovetails – Because these drawer parts aren't overly wide, cutting one single dovetail in each drawer side works well. A block, positioned immediately above the cut line in the drawer front and back, will help you position a chisel to remove the waste more accurately.

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shopnotes

Little Ripper Bandsaw Blades

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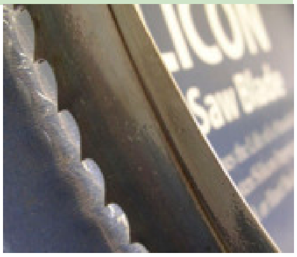
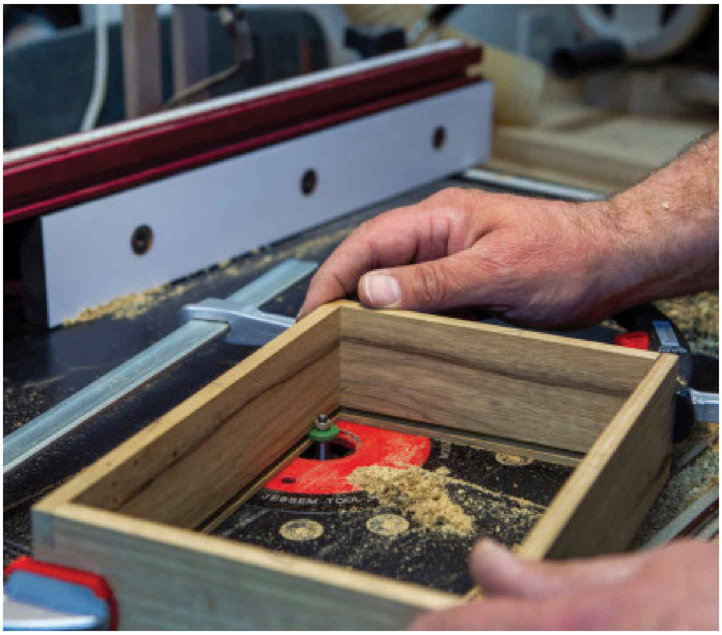


An Angle Is the Answer – Der-Garabedian angles his workpiece so he can cut straight downward when cutting his dovetails.

Clean Them Up – A hand plane takes care of smoothing the inner faces of the drawer parts before assembly.



Routed Slot – A slot cutter installed in a router table makes quick work of machining stopped grooves in the drawer parts to accept the drawer bottom.

Drawer time

I thought it just wouldn't be right to make a saw stand if I didn't at least use one of my saws while making it, so I broke out the dozuki and cut some dovetails. Due to the height of the drawer, I opted for a single tail in each corner. Tradition in fine furniture calls for half-blind dovetails on the front. However, this is a shop accessory and I thought it would be fitting to be able to see them.

I like cutting dovetails, but you could also create a drawer with many other forms of joinery, including drawer lock bits on the router, pinned rabbets, etc. You could also choose not to have a drawer. If you do decide to go with one, inset it so it's slightly recessed in its opening, instead of flush with the front.

If you've read some of my previous articles, you know I like to use a box slotting bit from Lee Valley Tools for drawer bottoms. The method calls for you to dry assemble the drawer, then run the bearing bit along the bottom of the drawer. I started this slot 1/4" from the bottom and created a 3/16" slot with two passes. If you choose this method, then you'll also need to round the corners of the bottom for a good fit. Choose the method and design you have the tools for. Glue up the drawer and set it aside to cure.

Finish first

It would be hard to apply finish in the drawer opening so I opted to put a finish on before final assembly. First, sand all surfaces and remove any scratches. I went with two coats of Osmo Top Oil and

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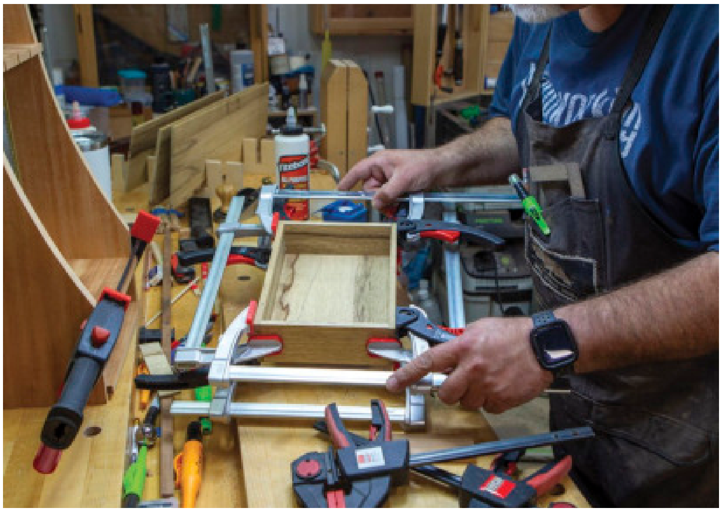
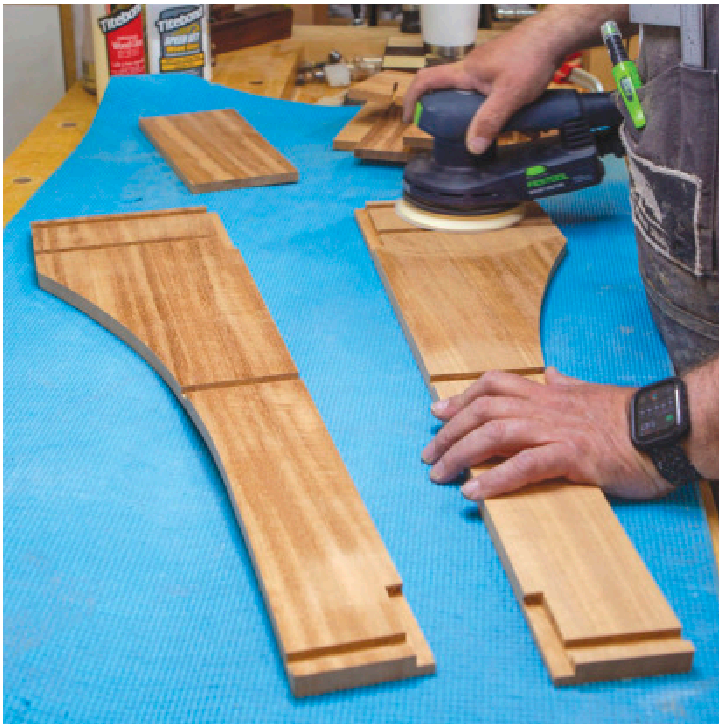


Lots of Clamps – A series of clamps, applied in opposing directions, brings the drawer parts together.



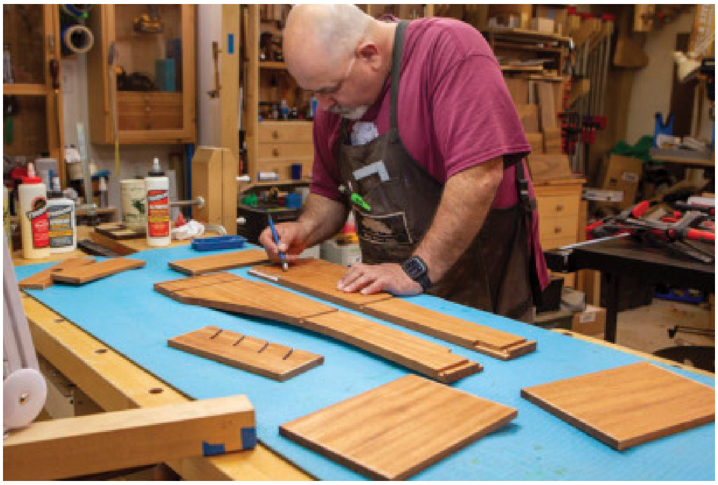
Prepare for Assembly – The inner surfaces of the parts need to be sanded before assembly can take place.

a fine furniture wax. Tape off any spots that will receive glue and apply the finish of your choice.

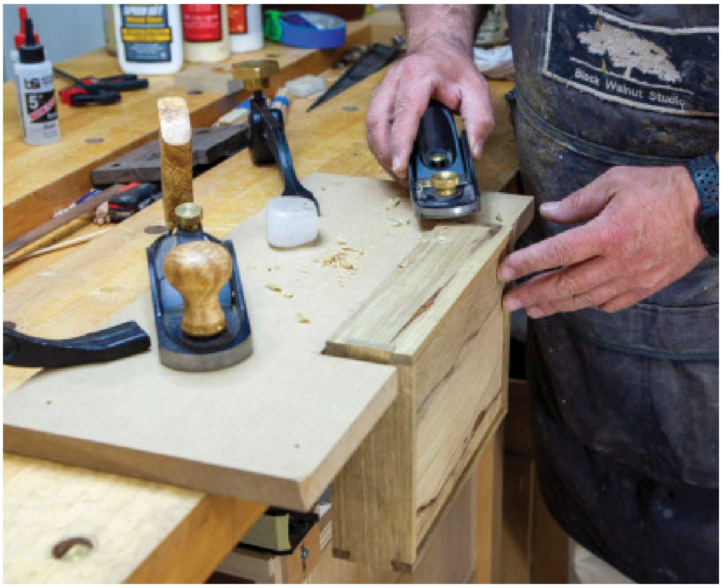
After the finish has been applied and left to cure, it's time to assemble the stand. Apply glue where needed and use as many clamps as needed. My dry fitting session gave me an idea of how many and where to use them.

While the glue sets on the carcass, I turned my attention back to the drawer. I chose to use an insert knob from Lee Valley Tools with an ebony insert. It's a fairly easy process of using a plug cutter, then glueing in the insert and finally shaping it on a lathe or even chucking it in a drill press.

I also made a drawer board out of 3/4" MDF to hold and support the drawer while I hand planed the outsides. The insides were done before gluing the drawer together. After the clamps come off the carcass, fit the drawer to its opening, either with hand planes or sanding. Once it fits smoothly, apply a finish to the drawer as well.



Dry Run – Because there are a lot of parts, a dry run is important. You don't want any surprises after glue is applied.



Work Smart – Der-Garabedian made a simple jig with two notches in it to hold the assembled drawer so he can plane the corner joints flush.

I think my saws will be happy now that they're out of a crowded hand tool cabinet. Maybe this will lead to better organization for the rest of my tools. Then again, I like a little bit of chaos in my shop.

STEVEN DER-GARABEDIAN
info@blackwalnutstudio.ca

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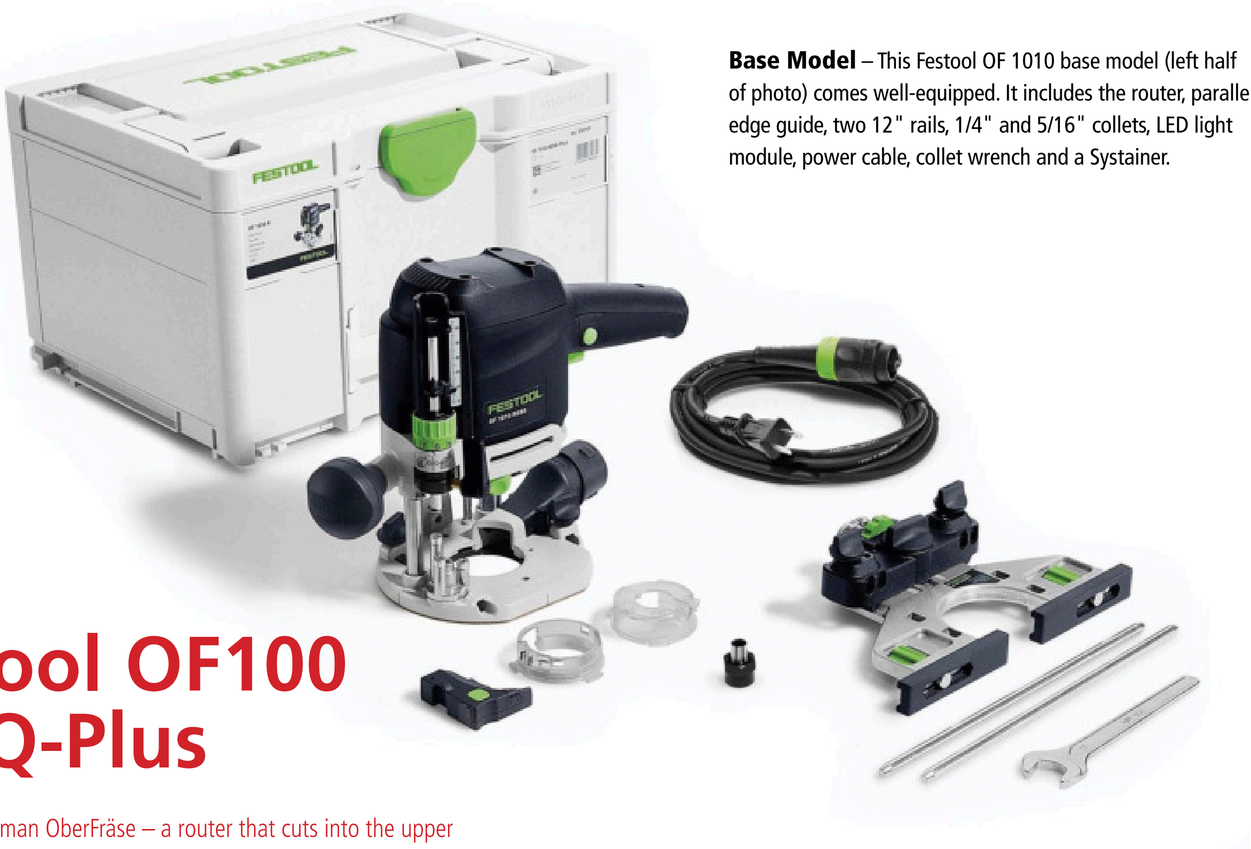
Festool OF100 REBQ-Plus Plunge Router
A solid step up

Reviews

Our experts review new tools and products especially suited to the woodworker and DIYer.



Base Model – This Festool OF 1010 base model (left half of photo) comes well-equipped. It includes the router, parallel edge guide, two 12" rails, 1/4" and 5/16" collets, LED light module, power cable, collet wrench and a Systainer.

Festool OF100 REBQ-Plus

OF (from the German OberFräse – a router that cuts into the upper surface of a workpiece), 1010 (wattage), R (relaunch of a previous model), E (electronic - variable speed, soft start, thermal overload protection), B (electronic brake), Q (plug-it power cord) Plus (comes with a Systainer)

Photos by Carl Duguay (Lead Photo by Festool)

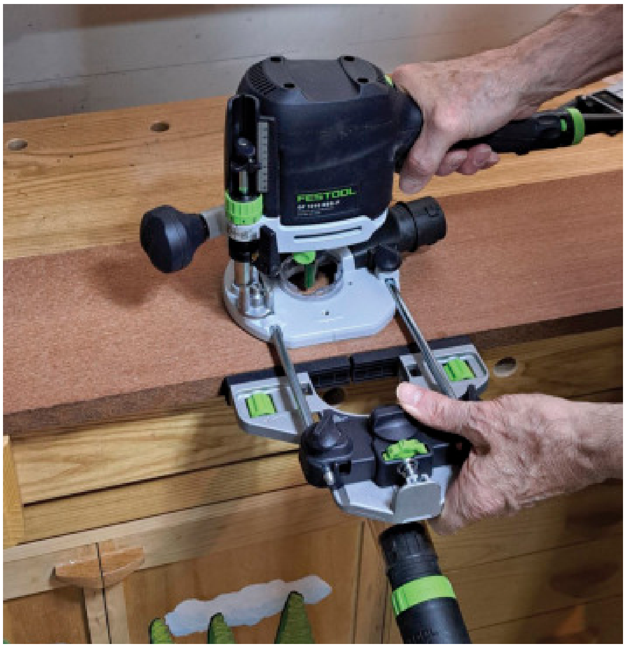
BY CARL DUGUAY

The Festool OF 1010 plunge router has long been praised for its precision, versatility and ease of use. For decades, it's been a go-to choice among woodworkers for tasks like profiling, grooving, mortising, inlaying, decorative surface cutting, edge cleanup and flush-cutting joinery.

Over the years, the OF 1010 has seen incremental upgrades. The latest version — the OF 1010 REBQ-Plus — brings the router closer than ever to being the ideal tool for fine routing work.

The OF 1010 comes in three flavours. There is the base model (photo above) and for an additional $270, you can purchase the base model bundled with the accessory kit (#578307), saving $155 compared to buying the kit separately. A third option bundles both with a 32" guide rail (#578308). These accessories

Guide Rail – The guide rail and guide rail adaptor adaptor increase the functionality and efficiency of the OF 1010.



Parallel Edge Guide – The redesigned parallel edge guide with micro-adjuster allows precise fine-tuning of the bit's distance from the edge of the workpiece. Used with a dust extractor, the clear extraction hood captures virtually all the dust for cleaner operation.

Accurate Adjustments – When using the guide rail, the micro-adjuster allows precise positioning in 0.1 mm (0.004") increments.

significantly enhance the router's functionality, making the accessory kit — in my opinion — indispensable.

While the improvements in the new model are evolutionary rather than revolutionary, they are meaningful. If your original OF 1010 is working well, there really is no reason to upgrade to the new router. Most (if not all) the new accessories can be retrofitted to older OF 1010s (made before September 2021). However, if you depend on your router daily — especially for precision work where dust collection and ergonomics matter — and if you're dissatisfied with your current router model or buying your first router, the upgraded OF 1010 deserves serious consideration.

A standout addition is the LED light ring mounted on the base. It provides excellent illumination of the work area, eliminating shadows, which is particularly helpful for detail work. For

LED Ring Light – If you've ever tried to use a router to perform accurate work, you'll know how helpful an LED ring light can be. It will not only shine a light on the immediate work area, but it will eliminate shadows.

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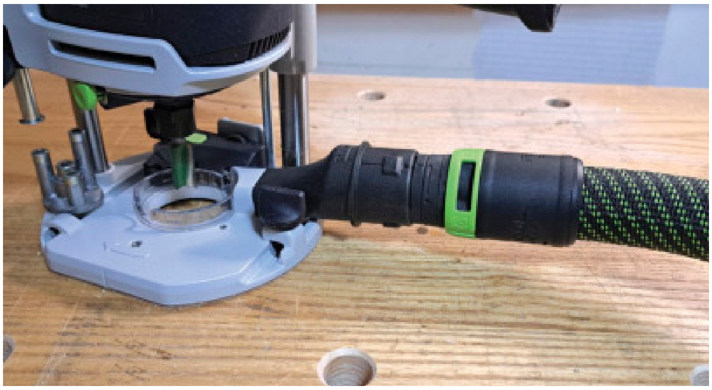
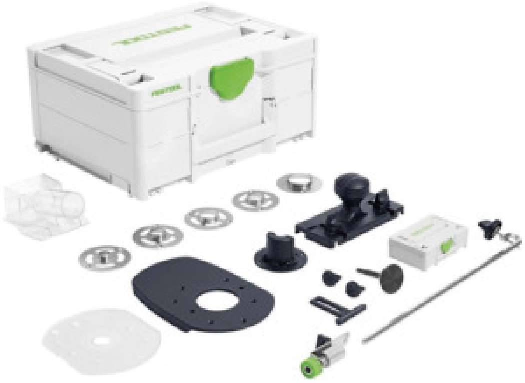


Great Dust Control – Festool is known for superior dust control, and the setup on this plunge router is no different. When attached to a Festool dust extractor, airborne dust is eliminated almost entirely.

Accessories – The Accessory Kit enhances the Festool OF 1010's versatility, providing essential attachments for precision, control and efficient routing tasks.



someone with aging eyes, I've found it invaluable for seeing fine cuts more clearly. I leave it attached permanently, but it's quick to remove if you need to. You get up to six hours of use and it has a 15-minute auto power-off feature. Recharging is via a USB-C cable (user-supplied).

The updated OF 1010 replaces the guide rail adapter with the redesigned parallel edge guide, which I think is a good choice — at least for me, as I use the edge guide much more frequently (the guide rail adapter is now bundled in the accessory kit). Using the two supplied guide rods, you can rout grooves up to 3-1/4" from an edge. But what sets it apart is the micro-adjuster, allowing precise positioning in 0.1 mm (0.004") increments. The edge guide is quick to attach and remove and remains stable in use. Also included is a guide bushing adapter that adds greater versatility by allowing you to use standard guide bushings with this router. It's an essential accessory that I use a lot.

When paired with a Festool dust extractor, the OF 1010 is very efficient. I estimate that a good 80 percent of the chips and fine dust are removed without the use of any other dust reduction accessories. The chip collector, which does an excellent job diverting chips to the extractor connector when edge routing, no longer comes with the upgraded OF 1010 — it's been moved to the accessory kit. Another reason to purchase the kit is the extraction hood that attaches to the parallel edge guide — it greatly contributes to near dust-free routing. The extraction hood is by far the best dust shroud I've ever used. Another accessory in the accessory kit worth mentioning is the trammel unit that enables you to rout arcs and circles just under 30" in diameter.

FESTOOL
OF 1010 REQ-F
0 1 2 3

Micro Depth Adjustment – The Festool OF 1010 is equipped with a standard depth adjustment dial that allows the user to dial in bit depth with 0.1 mm accuracy.

The OF 1010 strikes an ideal balance between power and maneuverability, especially for detailed work. Weighing just over 7 pounds (3.2 kg), it's easy to handle and well-suited for intricate routing tasks. The smooth-action plunge mechanism is excellent for mortising, inlays and controlled depth routing. A fine adjustment wheel lets you dial in bit depth with 0.1 mm accuracy — an outstanding feature for precision joinery.

The router delivers a plunge depth of 2-1/8" (55 mm), enough for most tasks. It's powered by a 1010-watt motor with a no-load speed range of 9,500 to 23,000 RPM. Soft start and constant speed under load contribute to a smoother, more stable routing experience.

Its ergonomic design and intuitive switch placement make the Festool OF 1010 router easy to control and comfortable to use. While it lacks support for 1/2" shank bits, the OF 1010 is clearly optimized for fine routing work, accepting only 1/4" and 5/16" (6 mm and 8 mm) shank bits.

While the OF 1010 sits at the higher end of the price spectrum for compact routers, its value lies in Festool's hallmark qualities: precision engineering; excellent dust collection; system compatibility; long-term durability; and superior after-purchase support.

In short, the OF 1010 stands out as a premium compact plunge router. Its precision, dust control, and ergonomic design make it ideal for fine woodworking. Other routers may offer similar features at lower prices, but few match the OF 1010's refined engineering and seamless system integration. Coupled with the accessory kit, it offers a complete routing system. For serious woodworkers and professionals, it's a top-tier choice.

OF1010 REBQ-Plus
MSRP: Base model $809
With the accessory kit $1,079
With the accessory kit and 32" guide rail $1,215
Website: FestoolCanada.com
Tester: Carl Duguay

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The **Thin Air Press Kit** is a simple, efficient and inexpensive vacuum system for veneering and bent lamination projects that was originally introduced for making maple skateboard decks. The TAP kit is also useful for furniture making, cutting boards and utensils, flat panels, curved drawer fronts, guitars, pens and other turned objects, marquetry, handles for throwing axes, and more! Kits include a heavy-duty 20 mil vinyl vacuum bag with one-way valve and seal, a low-volume high-pressure hand pump, breather net, extra seals and instructions. TAP bags can be used for hundreds of pressings and are available in six sizes.

Roarockit.com

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Get the Air Power You Need for Long-Lasting Performance

KING
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The **King Canada KC-6160V2 stationary air compressor** is designed to meet the demands of both professional and serious DIY users. It's equipped with a thermally protected 6.5 peak HP motor with a reset function, ensuring durability and safety during extended use. The compressor delivers a maximum pressure of 150 PSI, with air delivery rates of 13.4 CFM at 40 PSI and 11.2 CFM at 90 PSI, making it suitable for a variety of pneumatic tools and applications. The 60-gallon tank provides longer run times, reducing the frequency of motor cycling.
Kingcanada.com

Precision Drilling for Professionals & DIYers

The **King Canada KC-116FN** is a versatile 13-inch floor model drill press (also available as a benchtop). Its 7.5-amp motor provides ample torque for various materials. Featuring 16 spindle speeds (220-3,600 RPM), it adapts to diverse drilling tasks. Adjustable intersecting laser guides enhance accuracy, while a halogen light illuminates the work area. The heavy-duty cast-iron table tilts up to 45° for precise angled drilling. This drill press offers precision and adaptability for both professional and serious DIY users.
Kingcanada.com

Benchtop Planer with Superior Finish and Dust Control

The **King Canada KC-13HPC** is a 13" benchtop planer equipped with a helical cutterhead, designed to deliver a smooth finish for woodworking projects. It features a robust 15-amp motor with thermal overload protection and offers a maximum planing width of 13 inches and a thickness capacity of up to 6 inches. It has an exclusive two-position dust chute to accommodate 4-inch and 2-1/2-inch dust connections. The KC-13HPC is a solid choice for hobbyists and small workshop owners seeking a benchtop planer that delivers a superior finish at a reasonable price point.
Kingcanada.com

Versatile Sanding Power for Your Shop

The **King Canada KC-760L** is a combination sander featuring a 6" × 48" belt and a 9" disc, powered by a 1 HP motor. It offers versatility with adjustable belt positioning from horizontal to vertical, and a tilting cast-aluminum table (0° to 45°) for various sanding applications. The machine's heavy-duty cast-iron construction ensures durability, and the belt platen is covered with a graphite pad to reduce friction and extend belt life. Additionally, it includes two dust chutes with a 2-1/2" to 4" adapter for efficient dust collection.
Kingcanada.com

Smooth and Efficient Jointing with the KC-6HJC

KING
INDUSTRIAL

The **King Canada KC-6HJC** is a solid 6-inch benchtop jointer for hobbyists and woodworkers seeking a compact and efficient machine. Its powerful motor, helical cutterhead, and user-friendly features make it suitable for a variety of jointing tasks. The KC-6HJC features a 1 HP, 10-amp motor operating at 12,000 RPM, efficiently handling various jointing tasks. Its helical cutterhead, equipped with 12 high-speed steel (HSS) inserts, provides a smooth finish and allows for easy rotation or replacement when dull.
Kingcanada.com

Versatile Cutting Power for Your Workshop or Jobsite

The **King Canada KC-5100NS** is an economical jobsite table saw with a folding stand, ideal for DIYers and light to medium professional use. Its 15-amp motor handles common construction cuts in framing lumber and sheet goods. The lightweight, rust-resistant aluminum table features extendable rails, providing a 25" rip capacity to the right of the blade. A notable feature is the single handwheel for height and bevel adjustment, including a blade height lock and micro bevel control. The saw comes ready to use with a 10" 40-tooth general-purpose blade, rip fence, miter gauge, table inserts, push stick, and wrenches.
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CXS 12: The Go-To Choice for Common Everyday Drilling and Driving Tasks

Light, compact and impressively powerful, the **Festool CXS 12 Cordless Drill (#576869)** delivers more torque than the previous generation. It will quickly become your go-to everyday driver for common tasks providing plenty of power in the most compact format. The ergonomic C-shape design facilitates precise working through the grip position in both the drilling and driving axis. Several available chuck attachments easily tackle the most difficult applications, even in narrow spaces or corners, while the FastFix interface and the CENTROTEC system ensure fast bit changes.
FestoolCanada.com

SYS-AIR Portable Air Filter

The **Festool SYS-AIR (577791)** is a portable air filter housed in Systainer for easy transport. Weighing around 22 lbs, it features a powerful two-stage filtration system, capturing fine dust with an airflow up to 400 CFM. It offers two speeds and disperses clean air upwards. filter status light and easy filter changes ensure optimal performance. Compatible with Festool's T-LOC system and featuring an integrated outlet, the SYS-AIR improves air quality conveniently in the shop or on any job site.
FestoolCanada.com

SYSLITE Shop and Jobsite Lighting

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CSC SYS 50: The Ultimate in Portable Precision

The **Festool CSC SYS 50 Cordless Table Saw (#577378)** is so compact that it fits into a Systainer. It's just as versatile in use, as it's tremendously convenient in size. Make rip cuts of up to 11" (280 mm), crosscut widths of up to 17-3/4" (450 mm) and bevel cuts of -2° to 47°. The unique digital operation produces results with maximum precision, with accuracy within a tenth of a millimetre (1/256"). The 2×18 V dual battery system and brushless EC-TEC motor delivers the power and torque you expect from a corded table saw. The UG-CSC-SYS underframe collapses for easy transport from the vehicle to the jobsite.
FestoolCanada.com

OF 1010 REBQ Compact Router

The **Festool OF 1010 REBQ (578017)** is a compact, 1010-watt plunge router perfect for precision woodworking. It accepts 1/4" and 8mm bits, featuring a double-column clamp for rigidity and precise depth adjustment to 1/10 mm. An integrated LED ring illuminates the work area. Enjoy quick bit changes and efficient dust extraction with Festool systems. Its lightweight and ergonomic design allow for excellent control when profiling edges, cutting grooves, and performing intricate routing tasks. This router balances power and maneuverability for detailed woodworking.
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Festool has been setting the standard for track saws for decades. The **Festool TS 60 KEB Plunge Cut Track Saw (#576726)** is redefining this again. The unique Kickback Stop protects your workpiece and helps to minimize the risk of injury. Equipped with the latest-generation brushless EC-TEC motor, the saw delivers a cutting depth up to 2-7/16" (62 mm). The most versatile saw of its kind guarantees perfect work results whether ripping, cross-cutting or making bevelled and angle cuts in thick materials. Combine it with the FSK cross-cutting guide rail to get a portable and easy-to-use compound mitre saw system for accurate angle cutting.
FestoolCanada.com

The All-in-One Cordless Drilling and Driving Solution

The **Einhell TE-TK 18 Li Kit (CD+CI)** (Art. 4257245) is a cordless drill and impact driver set designed for DIY enthusiasts and professionals seeking versatility and convenience. The tools are powered by 18V 2.0Ah batteries. The drill features a single-sleeve 13 mm (0.51") chuck, robust 2-speed gearing, and electronic speed control with 21 torque settings. The impact driver has a 1/4" hex collet and delivers speeds from 0 to 2,300 RPM. It has a torque rating of 140 Nm. The kit includes two 2.0 Ah (18V) batteries, a quick charger, and a carry bag.

Einhell.ca

Lightweight and Versatile Cordless Trimming

The **Einhell Cordless Telescopic String Trimmer** (Art. 3411260) provides great value, especially for small to medium-sized gardens. It's lightweight, easy to handle, and offers the versatility of the Power X-Change battery system, which is compatible with a wide range of Einhell tools. Powered by an 18V battery, it delivers optimal power, and the absence of a power cord allows for unrestricted movement. An adjustable telescopic handle and a motor head that tilts and rotates further enhance its versatility for various trimming tasks. The battery and charger are sold separately.

Einhell.ca

Cordless Convenience for Effortless Leaf Removal

The **Einhell GP-LB 18/200 Li E-Solo** (Art. 3433556) is a cordless leaf blower designed for efficient and convenient yard maintenance. Equipped with a brushless motor, the blower delivers more power and extended runtime compared to traditional carbon brush motors. Furthermore, registering the product online grants a 10-year warranty on the motor. The blower achieves air speeds up to 200 km/h and a maximum air flow rate of 670 m³/h, making it suitable for effectively clearing leaves and debris. A turbo switch is available for maximum blowing power, aiding in the removal of stubborn or wet leaves. The battery and charger are sold separately.

Einhell.ca

Cordless Mowing with Brushless Performance

The **Einhell RASARRO 36/42** (Art. 3413273) is a cordless lawn mower designed for medium-sized lawns. It operates on the Power X-Change battery system, using two 18V batteries to deliver 36V of power. Equipped with a brushless motor, it offers enhanced performance and durability compared to traditional carbon brush motors. A six-stage central cutting height adjustment, ranging from 25 to 75 mm, allows for customized lawn care. A 50L (13.2 Gallon) grass collection bag with a top-level indicator facilitates cleanup. The mower also includes a mulching plug for eco-friendly lawn fertilization and comes with two 4.0Ah batteries and a high-speed charger.

Einhell.ca

Powerful Cordless Pruning for Versatile Garden Tasks

The **Einhell GE-LS 18 Li-Solo** (Art. 3408304) is a cordless pruning shear designed for cutting branches up to 28 mm in diameter, making it suitable for a wide variety of pruning tasks. It's equipped with high-quality bypass blades designed for clean and efficient cuts, promoting healthy plant growth. Powered by an 18V battery, this shear features an ergonomic handle with a soft grip for comfortable use, a safety switch, and an on/off sliding switch to prevent accidental activation. It is supplied with a sturdy plastic cover for safe storage. The battery and charger are sold separately.

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Inflate Anywhere with this Cordless High-Pressure Inflator

The **Einhell CE-CC 18 Li-Solo** (Art. 2071020) is a cordless high-pressure inflator designed for tasks such as inflating car tires, bicycle tires, and sports balls. It allows for quick and easy reading of current pressure settings, with options to display in bar, PSI, or kPa. You can set the desired pressure up to a maximum of 160 PSI, and the inflator features an automatic shut-off function that activates once the preset pressure is reached. It also offers the flexibility to inflate items without presetting a pressure value. On-board storage is included for the 3-piece inflation adapter set, ensuring accessories are readily available. The battery and charger are sold separately.

Einhell.ca

Spray Finishing in a Small Shop? You Bet!

If you're at the point where finishing your projects with a brush is beginning to take too much shop time, then you really should think about spray finishing.

Photos by Rob Brown (Lead Photo by Adobe Stock)

BY CARL DUGUAY

Most hobby woodworkers do their finishing with a brush or rag. However, as you begin to undertake more projects, or you move to larger carcass work, it's natural to start thinking about spray finishing. If you work in a small shop you might think that spraying is out of the question. However, that's not the case. A few tools and a knock-down spray booth will enable you to spray finishes easily and safely.

Why spray?

There are at least three good reasons for considering a switch to spray finishing. First, it's surprisingly easy to achieve a near-perfect finish with spraying. With a bit of practice, you'll be able to apply the finish evenly and uniformly in a lot less time than you would by brush. Second, because a spray finish goes on thinner than a brushed finish, it dries fairly quickly. Dust doesn't have much time to contaminate the surface, and you can apply any follow-up coats that much sooner. Third, because spray finishes are fast and easy to apply, you can spend more time building projects rather than finishing them.

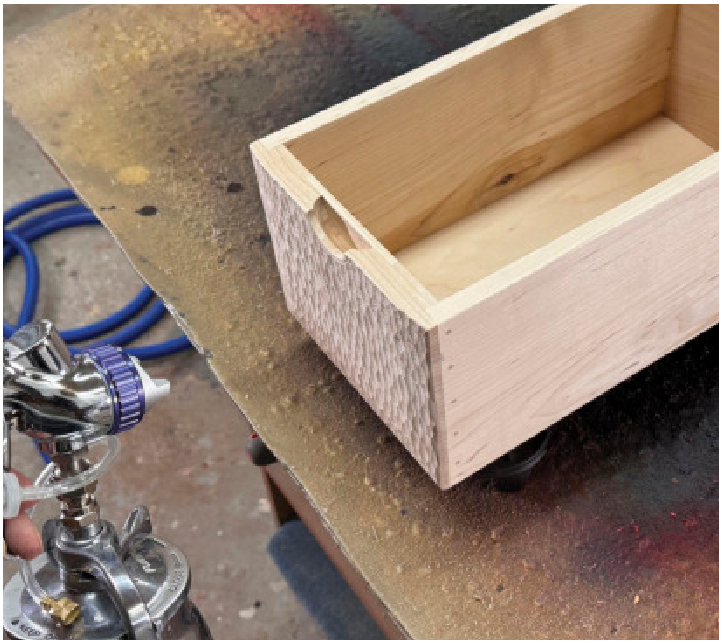
An additional point to consider: spraying a project, no matter the size, allows you to get into inside corners much easier than brushing or wiping. This is especially true with film finishes.

Two spraying options

A spray finishing system consists of two devices that work in tandem - a continuous source of pressurized air and a gun that atomizes the finish and delivers it in a controlled pattern onto the work surface. There are two basic types of spray systems: those that deliver air at high pressure (compressor-driven spray guns) and those that use high volume, low pressure (HVLP systems).

Since the advent of spray finishing, air compressors have provided the necessary source of pressurized air. The compressor forces air at high pressure into a spray gun, which atomizes the finish and projects it at high pressure (upwards of 60 or 70 PSI) onto the work surface. The drawback is that, because of the high pressure, only about 30 percent of the finish lands on the work surface. Most of the finish either bounces back from the surface or ends

Lots of Advantages – Spraying on a finish is beneficial for applying a finish to a large area, especially if there are corners or edges that need to be finished. (Photo by Adobe Stock)



Get in the Corners – Spray finishing makes it easy to get finishing material into the inside corners and leave a smooth finish. This is especially important with drawers, but also for boxes, cabinets and many other pieces.

HVLP
APOLLO SPRAYERS

Conversion Spray Gun – This is a conversion spray gun that's used with a large compressor and high-pressure air. A hose brings finishing material from a larger container to the gun. Very few hobby woodworkers use this type of compressor-driven spray finishing equipment. (Photo by Apollo)

MINI-MITE 4
PLATINUM
FUJI SPRAY

HVLP Turbine – A typical HVLP turbine spray unit includes a spray gun, hose and turbine unit. The turbine unit is small and portable. It provides the air pressure to spray the material onto the project. A standard electrical outlet is all that's needed to operate an HVLP turbine unit.

Atomizing Material – The basic principal of a spray finishing unit is to atomize finishing material and spray a coat of it onto a finished project or parts. The turbine unit or compressor provides the air pressure and the spray gun can be adjusted to produce a flow of material that can be applied to the wood's surface. (Photo by Adobe Stock)

up sprayed around the work surface. Quite a bit of the wasted finish material ends up vented into the atmosphere. HVLP spray guns that run off a compressor are referred to as "conversion spray guns." Because these spray guns require a lot of air, you'll want to use a compressor in the 5 HP, 60-gallon range, and with an 80 percent or higher duty cycle, otherwise the compressor is going to by constantly cycling on and off.

HVLP systems significantly reduce the problem of overspray and bounce back. They rely on a high volume of air at a low pressure (a maximum of 10 PSI) to transfer upwards of 80 percent of the finish onto the work surface, which is better for your pocketbook and the environment. And, because the air is travelling at a low velocity, it's a lot easier to control the spray.

HVLP turbine systems

Compressor systems use siphon-style spray guns and operate on the "venturi principle." Air passes over a narrow opening filled with the finish, sucking the finish out of the container and depositing it on the work surface. This system tends to result in a great deal of overspray as a result of using turbulent high pressure (upwards of 50 PSI), low volume air to deliver the coating to the surface.

Alternatively, HVLP systems have put professional-quality spray application tools within reach of small shop owners and hobbyist woodworkers. Such systems are multi-stage turbines that deliver a large quantity of low-pressure air (10 PSI or less) to the spray gun. Some of this air is used to pressurize the cup containing the coating. When the trigger is pulled, this pressure forces the coating up a tube and into the air stream, which then deposits it on the surface being sprayed.

Transfer rates with a conventional compressor-driven gun can be as low as 20% with most of the coating being lost as overspray. With an HVLP system, it's possible to achieve transfer rates up to 90%. This means less of the coating will end up in the air as overspray, making this a much more efficient system to use in a small or home shop. Turbines also warm and dry the pressurized air, which helps the applied finish cure more quickly. As well, turbines are very small, so they can be easily stored or moved from one location to another. You'll find turbines are rated by the number of fans (called stages) they contain. The more stages, the greater the volume of air and pressure the turbine can deliver, and the wider the viscosity range of the finish you can use without having to thin the finish.

Use a waterborne finish

Ready-to-spray waterborne finishes are ideal for small shops or home-based shops because they don't give off as many volatile organic compounds (VOCs) as solvent-based finishes, which means they're safer for your health. As well, they're practically odourless, easy to clean up and they don't produce explosive vapours, so any fans or other ventilation equipment you use in the vicinity of the spray booth don't have to be explosion proof.

Equally important, the current generation of waterborne finishes are just as durable and produce as beautiful a finish as the more traditional solvent-based finishes. These finishes have great clarity as they don't have the typical amber cast that you get with solvent-based finishes. You do, though, need to pay somewhat more attention to temperature and humidity with waterborne finishes than you would with solvent-based finishes.

Go small

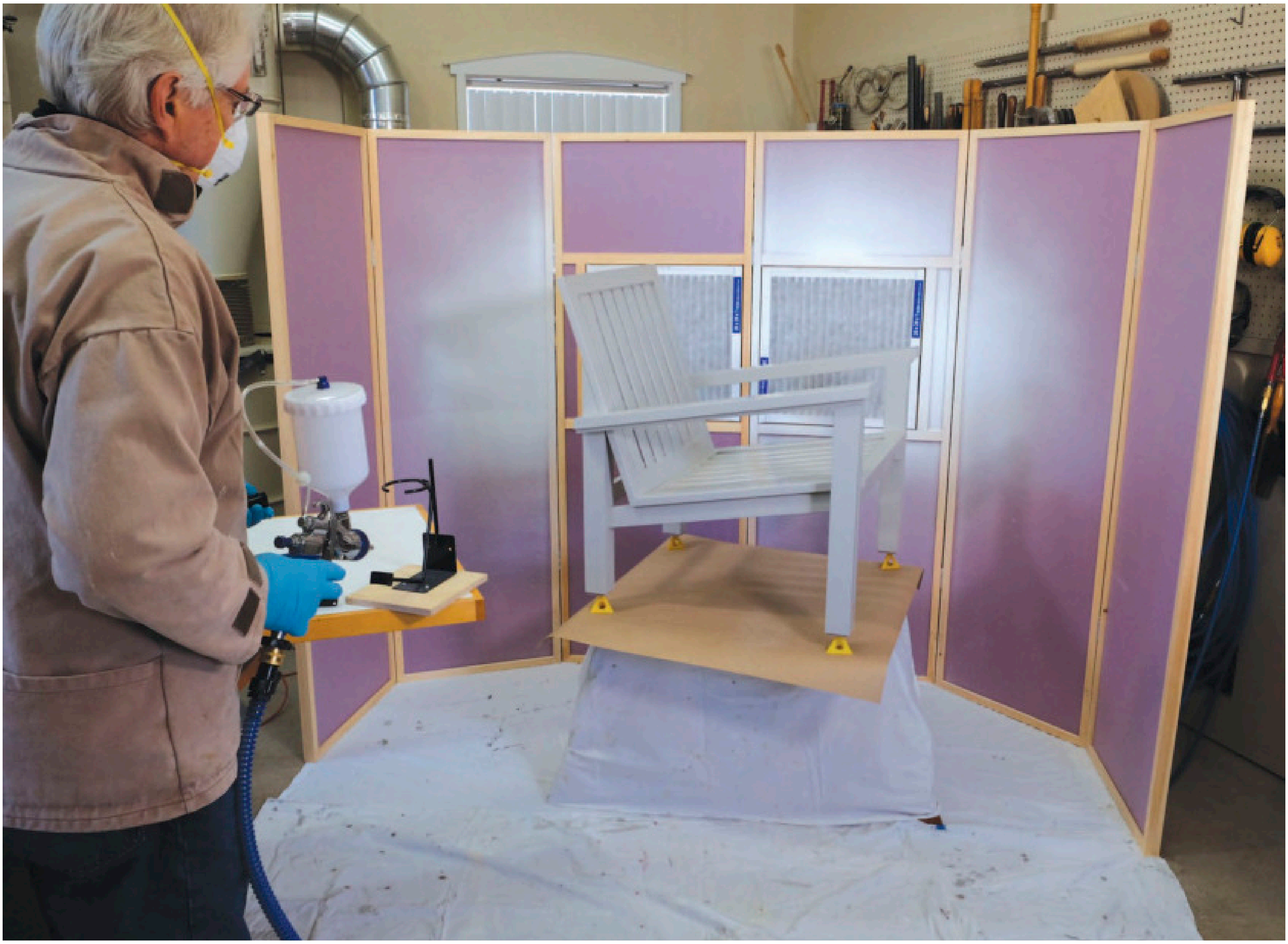
Space is at a premium in most home workshops and few are large enough to have sufficient room to set up a dedicated spray

Water Works Wonders – Waterborne finishes make spray finishing much easier. Not only is their viscosity generally good for spraying, but cleanup is a breeze. Waterborne finishes also have much lower VOCs than oil-based finishes, making them safer for the environment and people. Additionally, they provide no risk of explosion.

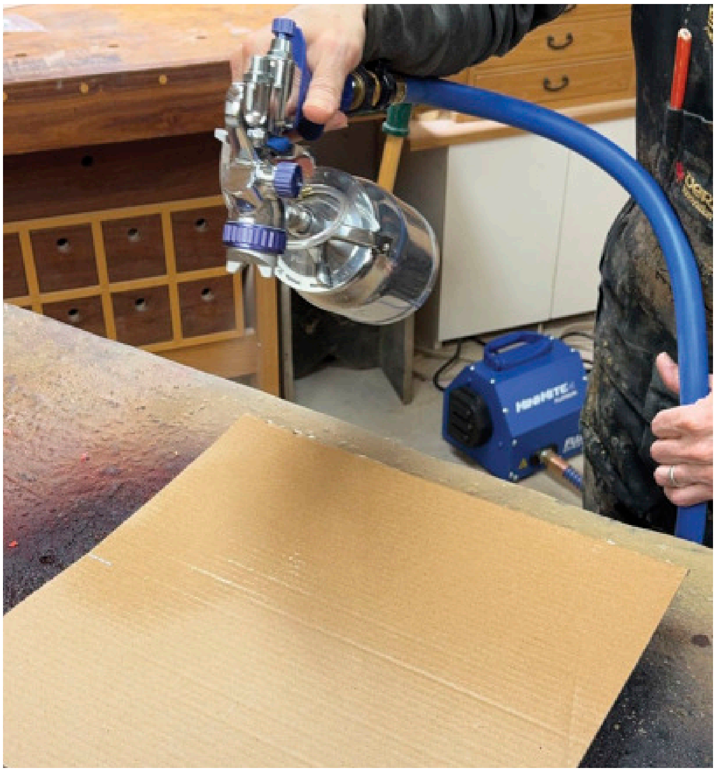
area. That doesn't mean you can't spray. But you do have to think and work small.

The key is to use a simple take-apart spray booth that you can quickly set up when needed, and easily disassemble for storage between uses. For large projects that won't conveniently fit into your booth, apply the spray finish to project components before you do your assembly.

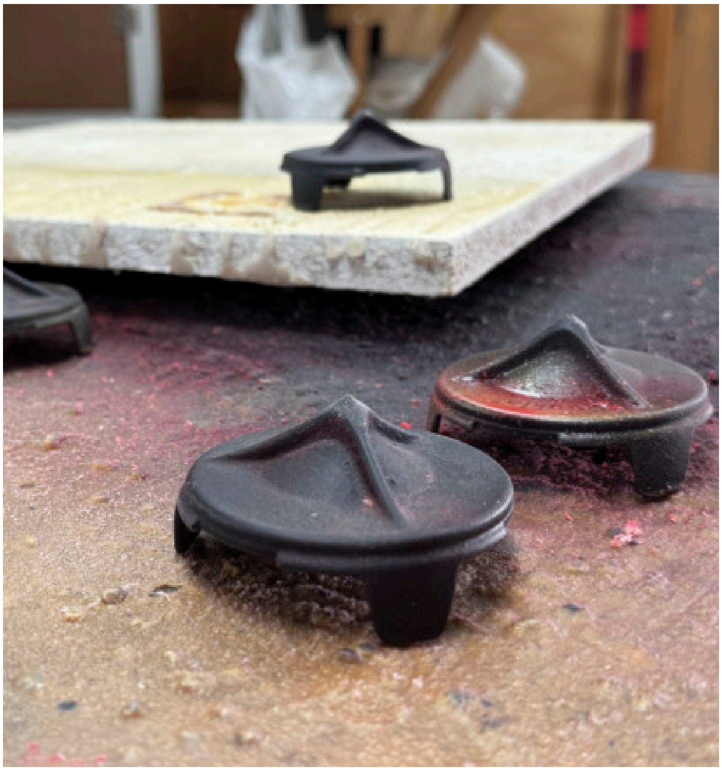
For small shops, a free-standing, knock-down booth is a good choice for spraying large projects. You can duct tape pieces of heavy cardboard (appliance boxes work well) together for the body of the booth. This makes it easy to quickly set up the booth when needed, and then fold it up and store it between uses. A small benchtop booth is handy when you want to spray smaller pieces. As an alternative to cardboard you could also use



Spray Booth – A spray booth will help reduce overspray in the shop and help protect the pieces being sprayed. A simple spray booth can be made from cardboard, though most woodworkers would have little trouble making a very basic foldable booth. The construction of this booth is detailed in an article titled "Spray Booth for Small Shops" on our website. (Photo by Mark Salusbury)



Practice Makes Perfect – Spraying water on cardboard or other wooden scraps is a great way to learn how to adjust the spray gun and practice your technique.



A Helping Hand – A lazy Susan, for rotating smaller workpieces while you spray them, and some work supports, to keep workpieces off the worksurface, are great additions to a new sprayer's arsenal.

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I've had great success using large appliance boxes. Usually, I place them on a pair of 24" high shop-built sawhorses. I also use a much more compact booth that sits on my workbench for small projects, such as jewellery boxes, display cases, drawer pulls, hand tools and the like. If you choose to use a fan, set it on the workbench behind the spray booth, so it vents away from the project you're spraying. Optionally, tape a furnace filter over the face of the fan to absorb any overspray.

Set up the booth the night before so dust has time to settle down before you begin spraying. And for the best results, it's important to illuminate what you're spraying, so you can differentiate between wet and dry areas. Instead of overhead lights, use free-standing lights that you can raise, lower or angle to better illuminate the work. A simple shop-made turntable is also invaluable for rotating your work so that you can spray all sides.

Play it safe

Even though waterborne finishes are much safer than solvent-based finishes, it's still a good idea to wear a proper respirator when spraying. Just as important, keep your equipment clean, especially the jet nozzles on the gun. When you're only doing a small amount of spraying there may be a temptation to clean it the next time. I've made that mistake, and wouldn't want to repeat it.

Most of the time, problems with spraying come down to technique. If you've not done it before, take the time to practice using the equipment. Understanding how to use an HVLP system isn't complicated, but developing proficiency in using the gun does take time and practice. But, if you're looking for the optimal finish, then the investment of money and time is well worth it.

If you're at the point where finishing your projects with a brush is beginning to take too much shop time, and you'd like to up your finishing game, then you really should think about spray finishing. A good place to start is one of the better books on the topic, such as "Spray Finishing Made Simple," by Jeff Jewitt, or "Spray Finishing," by Andy Charron. Once you've made the plunge, spend the time to get acquainted with the spray system, and practice until you're satisfied with your results before you commit to a first project. The time you invest in learning about the equipment and practicing with it will pay huge dividends in the long term.

CARL DUGUAY
cduguay@canadianwoodworking.com

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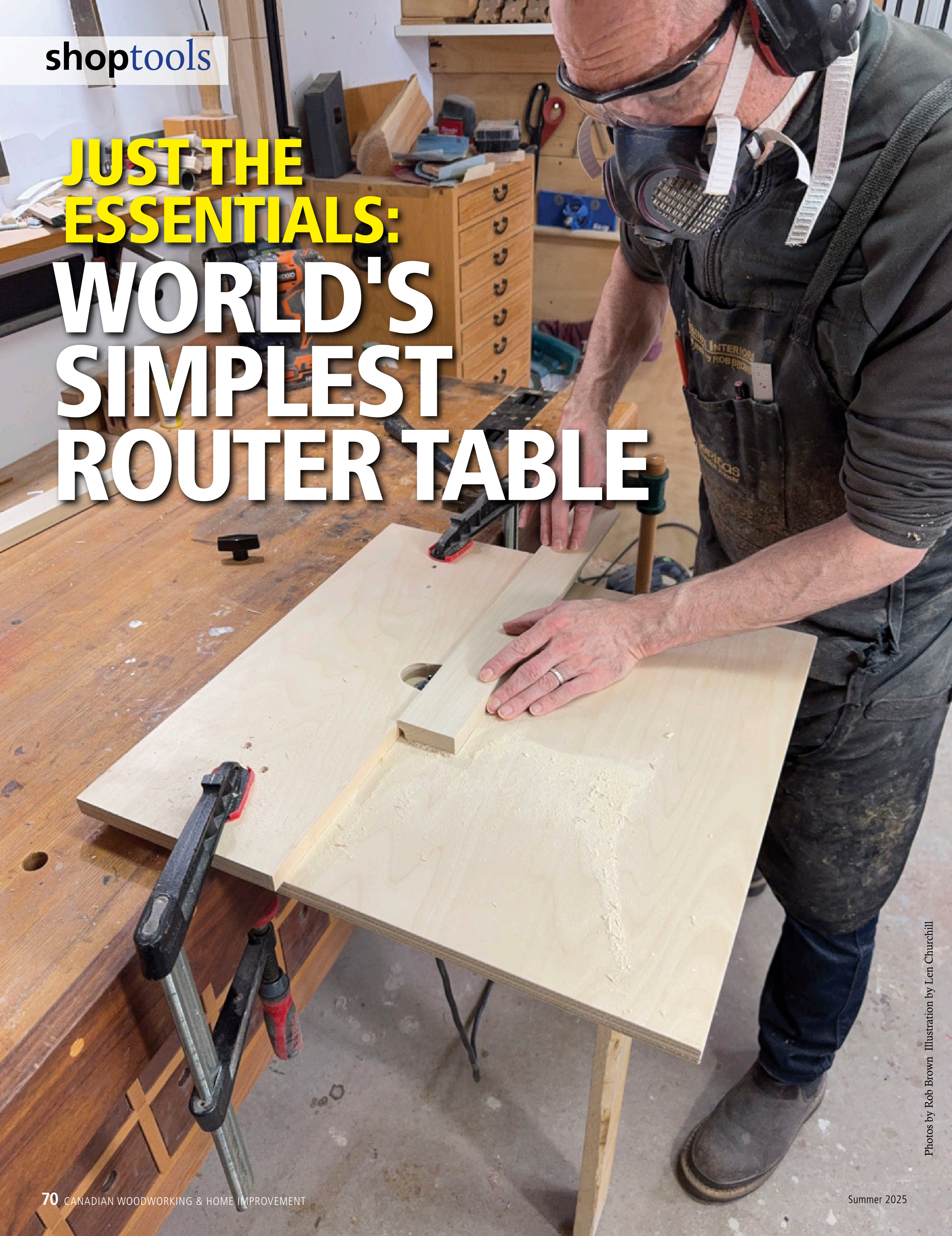


Photos by Rob Brown Illustration by Len Churchill

This bare-bones router table can be made in no time and will give woodworkers of all skill levels a functional fixture to up their routing skills and improve their efficiency.

BY ROB BROWN

A router is surely the most multi-functional power tool in a woodworker's arsenal. Used freehand, a router can do a wide variety of things, but make jigs or fixtures for it and it only becomes even more versatile and functional.

One way to increase its potential is to use it in a router table. Typically, a router table is made up of a table surface that the router gets mounted to underneath, a fence to guide the workpiece and some sort of a base to support the table surface. The first two items are very simple, though the base can run the gamut from having just a set of four legs and four aprons, to including myriad drawers, cubbies and other storage areas, not to mention an integrated on-off switch, dust control measures, internal router lift mechanisms and other features. You can spend a fair amount of money on a router table, if you so choose. You can also spend countless hours designing and building an impressive shop-made version trimmed out with figured wood, flashy features and flexible attachments.

In this article I'll take you not only through the "how" but also share with you the "why". If you're a beginner woodworker it's important to know why you're building something a certain way. An experienced woodworker could likely complete this shop fixture by just looking at the main image of the project.

A different approach altogether

Another approach to making a router table is to pare down the entire unit until you're left with just the bare bones that will still do the basics quite well. This approach can save you time, money and space, while still providing you with a functioning router table. How heavily you reduce options depends on the type of work you'll be doing. It will also depend on whether you already have another router table or not.

A top is critical

A top is an absolute necessity. Not only does it hold the router in place, but it also gives you a surface to reference the workpiece off of. If you're only going to use bits with bearings, a top is all you'll need. The top will accept a router on its underside and be clamped directly to another work surface, like a workbench, table saw top, pair of sawhorses or outfeed table.

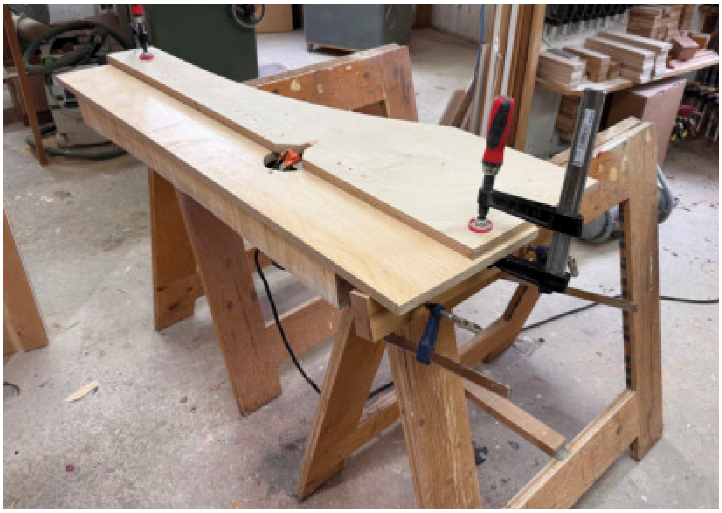
Consider size first

If you plan on running a lot of longer workpieces, such as trim or mouldings, machine a longer top to support the long workpieces; say something at least 36" long or longer. And in this case, the width can be narrower; somewhere around 15" should be fine. On the other hand, if you're mainly going to use this simple router table to machine small jewelry box parts and other small workpieces, a top about 16" × 20" could work out very well. Everyone making a router table like this needs to consider their unique usage requirements and make a top that will support the work they will be asking the router table to machine. Keep in mind, there's nothing wrong with making a few simple tops to take care of a wider variety of operations.

A top should be fairly strong and stable. Making one out of 1/2" material is likely too weak, unless you only plan to use a small trim router under it, and only make very light passes, which would likely be just fine.

With top thickness still in mind, consider how large of a router bit you're going to be using. A large bit that produces more vibration and torque will need a thicker top.

Generally speaking, 3/4" material is likely the best option for this type of router tabletop.



Select Your Size – Brown uses this top to machine longer lengths of trim and other workpieces. Its longer length helps support the workpieces as they're machined. A shorter, more squarish, top will work well for machining smaller workpieces.

Bit Size Matters – Larger router bits create more vibration. A thicker, stronger top will help dampen those vibrations and leave you with a better cut.

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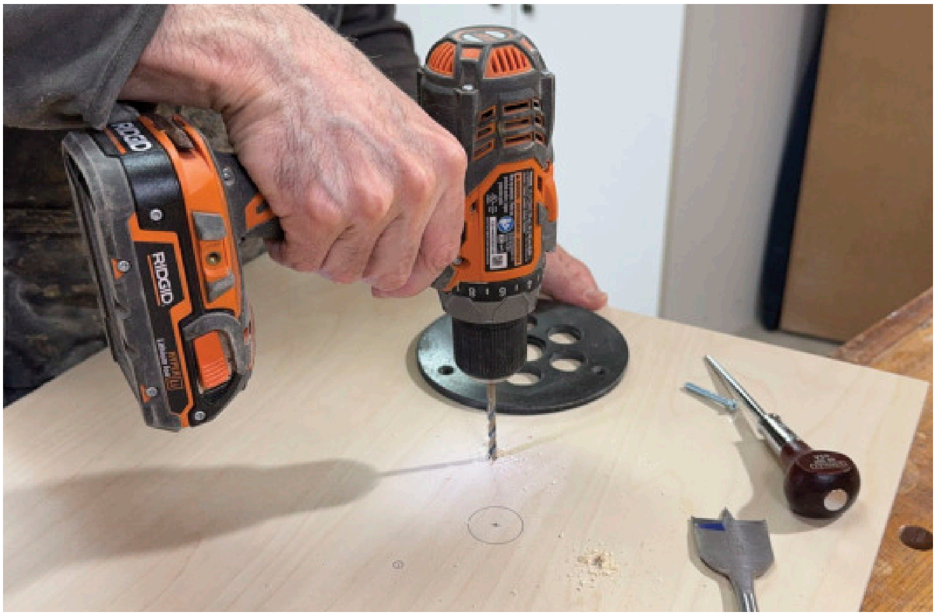
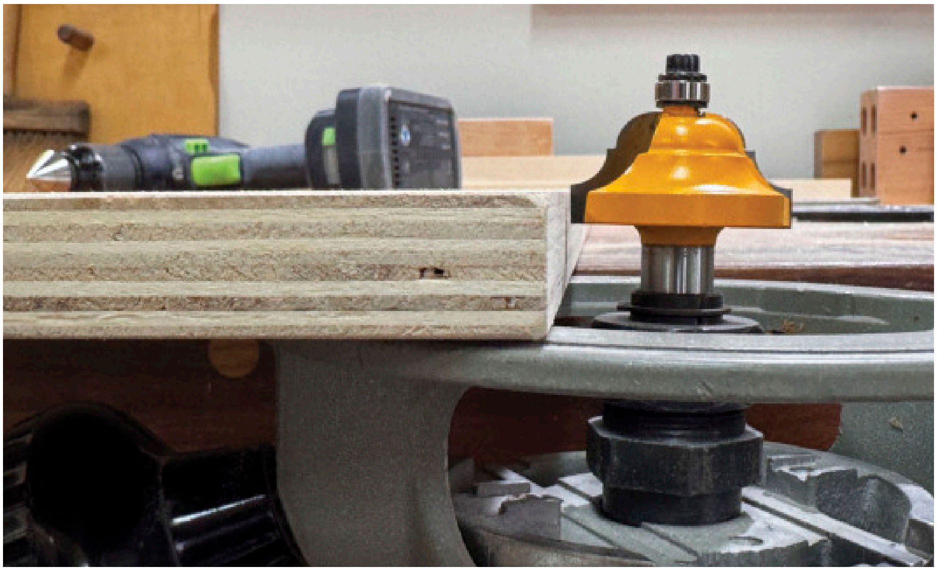


Drill for the Bolts – After the bolt clearance holes have been bored, counter sink the bolt heads in the upper surface of the top. It's possible to bore flat-bottomed countersink holes and use pan head bolts, but flat head bolts are much more common.



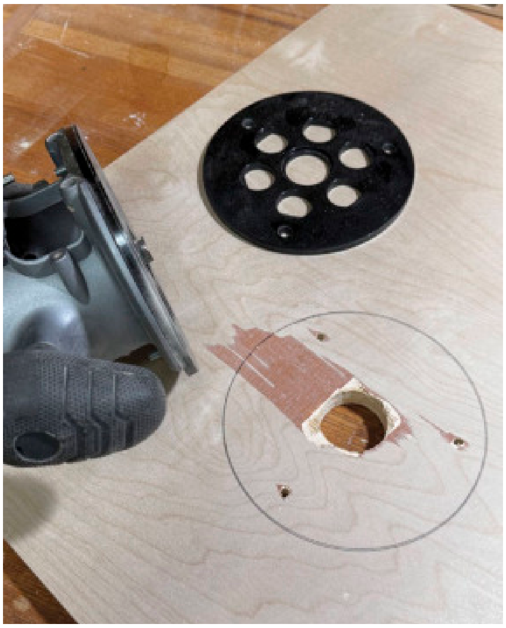
Enough Length? – Most bits will adequately protrude above the table height once they're installed, though that's not always going to be the case.

What material?

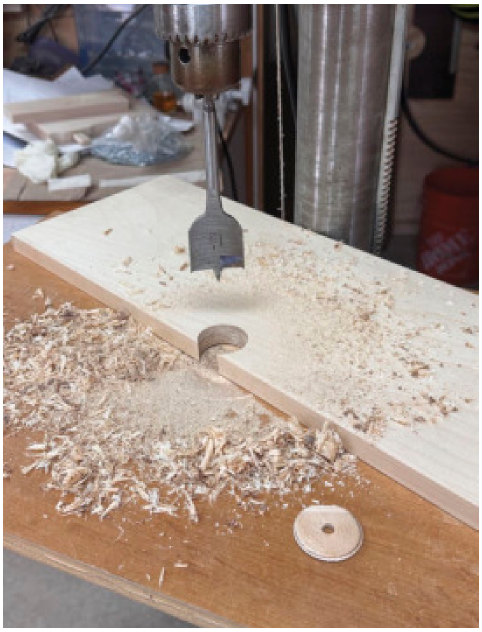
It's important that a router tabletop is flat, though once this top is clamped to the other work surface it will take the shape of that surface. Just make sure the surface you're clamping it to doesn't flex or twist the router tabletop out of flat.

A piece of plywood is likely the best material for a router table, even though it does have a slight tendency to twist or warp. A piece of particleboard or MDF is an option that stays flatter, though they aren't as strong as plywood. This will matter more if you plan on machining heavier joints with larger routers and bits, as bolt holes may have a tendency to come loose when using a softer or less durable material. Also, if you'll need to put a lot of downward pressure on the workpiece while machining it, plywood will stand up to that sort of stress much better than particleboard or MDF. Unless this router table is going to be used for the most lightweight of operations, I strongly recommend plywood.

Laminating the top with plastic laminate, or even applying a durable finish to both the upper and lower surfaces, will help the



Create a Recess – If you absolutely need a bit more height from one of your bits, you can machine a recess in the underside of the table, allowing the router to sit a bit closer to the upper work surface. Removing too much material will weaken the top.



Drill a Cutout – A notch in the edge of the fence will allow you to adjust the depth of the fence, relative to the cutting edge of the router. Unless you're using a very large diameter bit, the notch doesn't need to be too big.

workpieces move over the top more easily and protect the surface for the long run. Having said that, I've had good success with just bare plywood faces for these simple router tables, so don't shy away from that approach, too. If you're going to use this router table a lot, going the extra distance will likely be worth your while, but if this really is a less-is-more project, stick with a bare top surface.

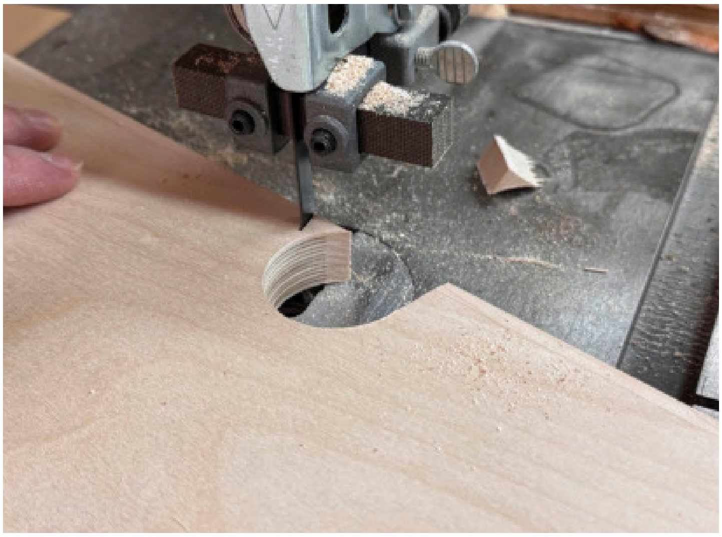
Attach your router

With your top (or tops) complete, the next step is to attach a router to its underside. The router should be attached back of the centre line of the table, so there's more top material on the worker side of the router than on the rear side. Keep in mind, this top will be clamped, bolted or screwed to another surface, so if the router is positioned too far back it will limit where the top can be secured to another solid fixture.

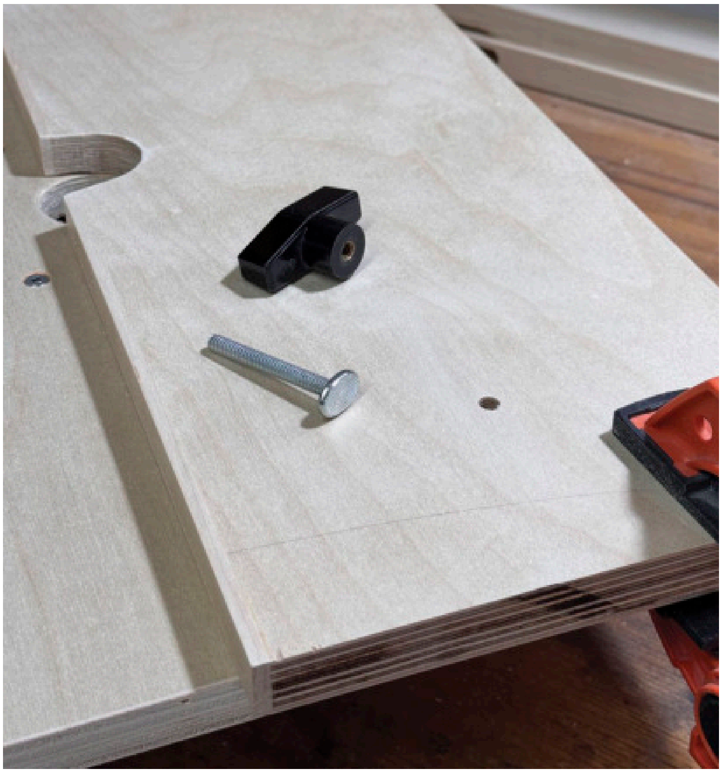
The simplest approach is to use the router's baseplate to locate where the bolt clearance holes and router bit clearance hole need to be. First, drill the clearance holes and countersink them on the upper surface, so the heads are just barely below the work surface. Next, use a medium-sized spade bit or hole saw to remove the material in the centre to allow a router bit to protrude through the top. Don't remove a large amount of material unless you know you're going to be using a large router bit in this router table. A 1-1/2" diameter hole is usually more than enough, but every situation is different.

The main potential downside to securing the router under a 3/4" thick top is that when the router bit is installed in your router there's an outside chance you can't adjust the bit so it's as far above the 3/4" thick tabletop as you need it to be. This will be a rare occurrence. You can usually extend the bit slightly from the collet, but that will only give you so much extra extension. For now, I'd suggest just keeping the following solution in the back of your mind, just in case you need it down the road, and proceeding with this build.

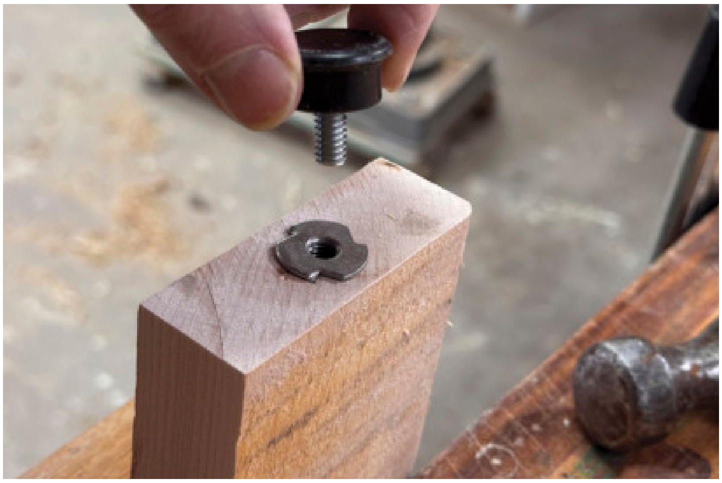
Wax Works Wonders – Applying a couple coats of finish to the fence's edge, sanding between coats, then hitting that cured finish with wax and steel wool, will create a much smoother fence edge to run workpieces across.



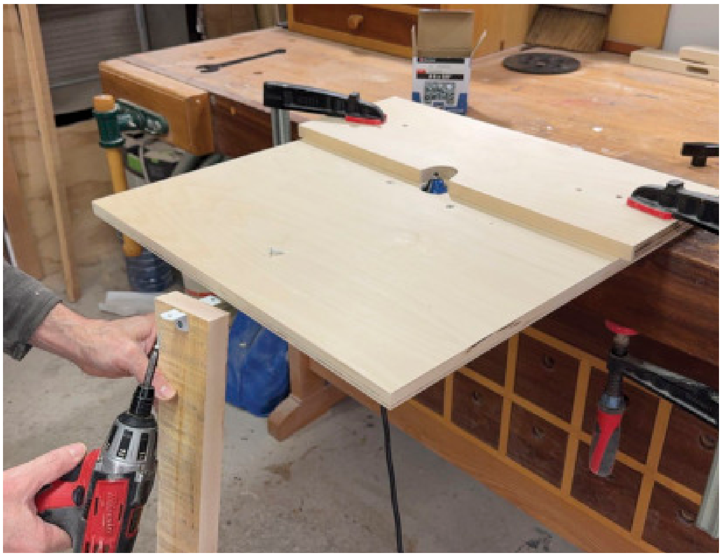
Remove the Wings – With the notch cut into the fence, remove the wings so the notch can be opened up so a rotating router bit doesn't come into contact with the fence.



Pivot Bolt – If it's hard to use clamps on both sides of the fence, it might be easier to use some sort of a bolt to fix one end of the fence in place. This will allow it to be rotated forward and backward, depending on the type of operation you want to make. In a pinch, you could even use a few screws to secure the fence to the router table.



Adjustable Foot – A T-nut hammered into a hole in the lower end of a leg will allow you to thread in an adjustable foot. This approach will let you easily adjust the height of the leg and support a large router tabletop so it doesn't flex in use.



Attach the Leg – A screw into the top of the leg, coupled with some simple brackets, will keep the leg positioned under the router table.

But what's the solution, you ask? If you ever need to have a bit protrude farther above this top surface you can remove a small amount of thickness from the underside of the top, directly where the router comes into contact with the underside of the top. This will allow the bit to protrude farther above the table. Just don't remove too much material, as that only weakens the router-to-top union.

Make sure you remove the router's baseplate when you install the router under the top. You may also need to buy some longer bolts to fix your router in place. Make sure to get the correct thread and diameter.

Fence

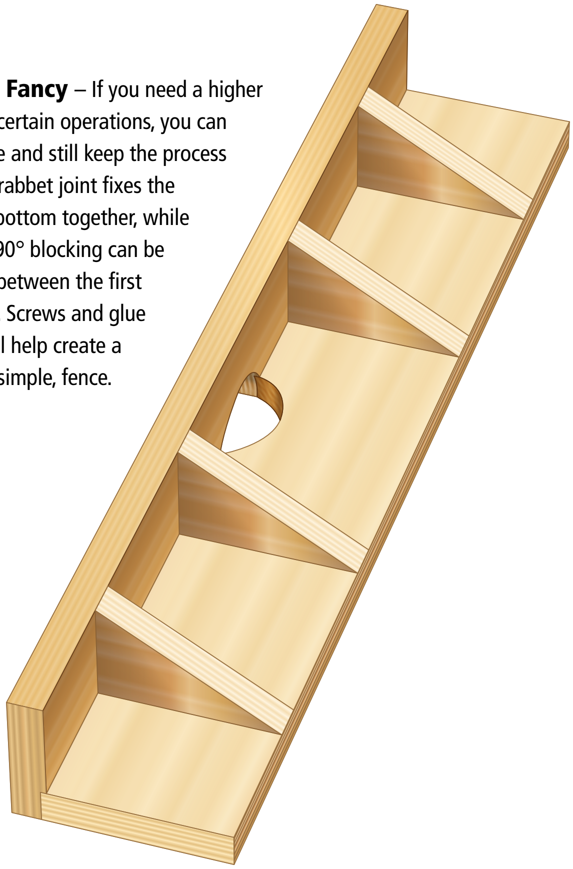
Unless you're only going to use router bits with bearings, which is unlikely, you'll need a fence. My main router table fence is somewhat complex, with a fairly high split fence and dust collection port, but for this bare-bones router table, simple is the name of the game. I'll describe two approaches, but I would recommend you make both, unless you already have a nicer, larger router table with a hot-rod fence. In that case, you'll just make one of the fences.

Option 1: Start super simple

Starting with a piece of material at least the length as your router table, rip it to 3" to 5" wide. A long fence should be on the wide side to protect against deflection. Straight-grained solid wood is great for this fence, but I've used plywood in the past with success. Material that's 3/4" works fine, though you can easily make it a bit thicker if you're using solid wood.

Make sure the front edge of the fence is smooth, as that allows a workpiece to slide on it more easily. Two good options are either adding a strip of 1/8" solid wood edging to the edge of the fence or applying a coat or two of a durable finish to the front edge and using wax and steel wool to buff it smooth after it cures. Minimizing friction is important for safe, efficient use. Because we're going to cut into one of the edges of the fence in the next step, it's a good idea to ensure both edges of the fence are smooth enough to easily run a workpiece across.

Since there are many times when a fence will have to be positioned so its edge is overlapping the router bit, a notch needs to be cut into the edge of the fence. At the midpoint of the fence, a 1" diameter hole, centred about 3/4" back from the edge of the fence, will take care of the majority of scenarios. Use a bandsaw or hand saw to trim off the two wings on either side of the opening. If you think you will be using a large bit from time to time, you can make another fence with a large opening on it. Cutting one larger hole



Getting Fancy – If you need a higher fence for certain operations, you can create one and still keep the process simple. A rabbet joint fixes the face and bottom together, while accurate 90° blocking can be attached between the first two parts. Screws and glue blocks will help create a solid, yet simple, fence.

is an option, but it's easier and safer to use a fence with a notch only as large as it needs to be.

Option 2: A more functional fence

If you want to make a more functional fence, that's an option, too. Start with the same length of material for the base of the fence, but machine another piece to act as the face. It can be the same length and about 4" or so wide. These two parts will get joined with a rabbet joint. Cut a few more pieces to act as 90° brackets and ensure they each have one edge and one end perfectly square. These can be short lengths of 2 × 4, solid wood or plywood. When you assemble these parts, ensure they're all as close to square as possible, as you'll sometimes be using this fence to position a workpiece perpendicular to the table. Assemble the fence and use screws in countersunk holes and glue to bring it together for good.

A notch will very likely be needed, so you can add that after the glue has dried. It would be possible to notch both the face and base before assembly. It doesn't need to be pretty, so any combination of medium-sized drill bits, hand saws and jigsaws is recommended. Just make sure to locate the notch away from where any support blocks are.

Fixing the fence in place

Clamping the fence to the top is the simplest approach, though it doesn't always work. As you'll quickly find out when you install this router table to another fixture, there's a chance you'll have trouble clamping the fence and top at the same time, as the fixture itself is in the way. If that's the case, using some sort of pivot bolt to secure one end of the fence and a clamp at the other end will allow both ends to be fixed in place, while the

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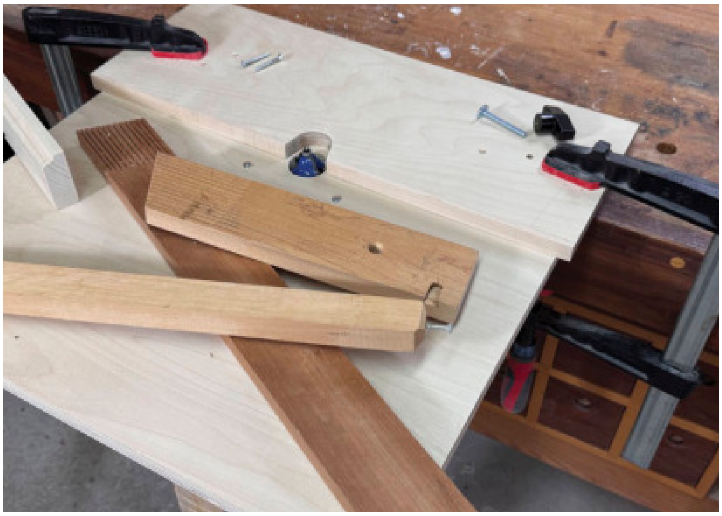

Accessorize – Accessories like featherboards, adjustable screw stops and even shop-made or purchased dust collection housing to direct wood chips will help make this simple router table even safer and more functional, without breaking the bank.

clamped end can be adjusted forward or backward to give you your cut. If you locate the pivot bolt vaguely centred on the width of your fence, you can use the same hole for both edges of the fence.

In use

Once everything is installed, it's always a good idea to ensure the bit will freely rotate by giving it a spin with your fingers. Sometimes the fence, or another obstruction, is in the way. Obviously, the router should be unplugged at this point.

During use, the tabletop should provide good support for the workpiece. If you feel any flex at all, adding a support leg (or two) or angled bracket will quickly take care of that. A single screw through the top, into the leg or bracket, might be enough to hold the supports in place during use. Adding a T-nut and using an adjustable threaded plastic foot will give you the luxury of adjusting the height of this support quickly and easily. Another option is to screw a length of solid wood under the top to support a longer top and help keep it flat.

One of the most important rules about using a router table of any type is to feed the stock in the correct direction, or the rotating bit may grab the workpiece and send it flying. When looking directly at the router table, with the fence on the far side of the table, always move the workpiece from right to left.

Accessories like featherboards, stops and especially push sticks will turn this simple fixture into an even more capable workhorse.

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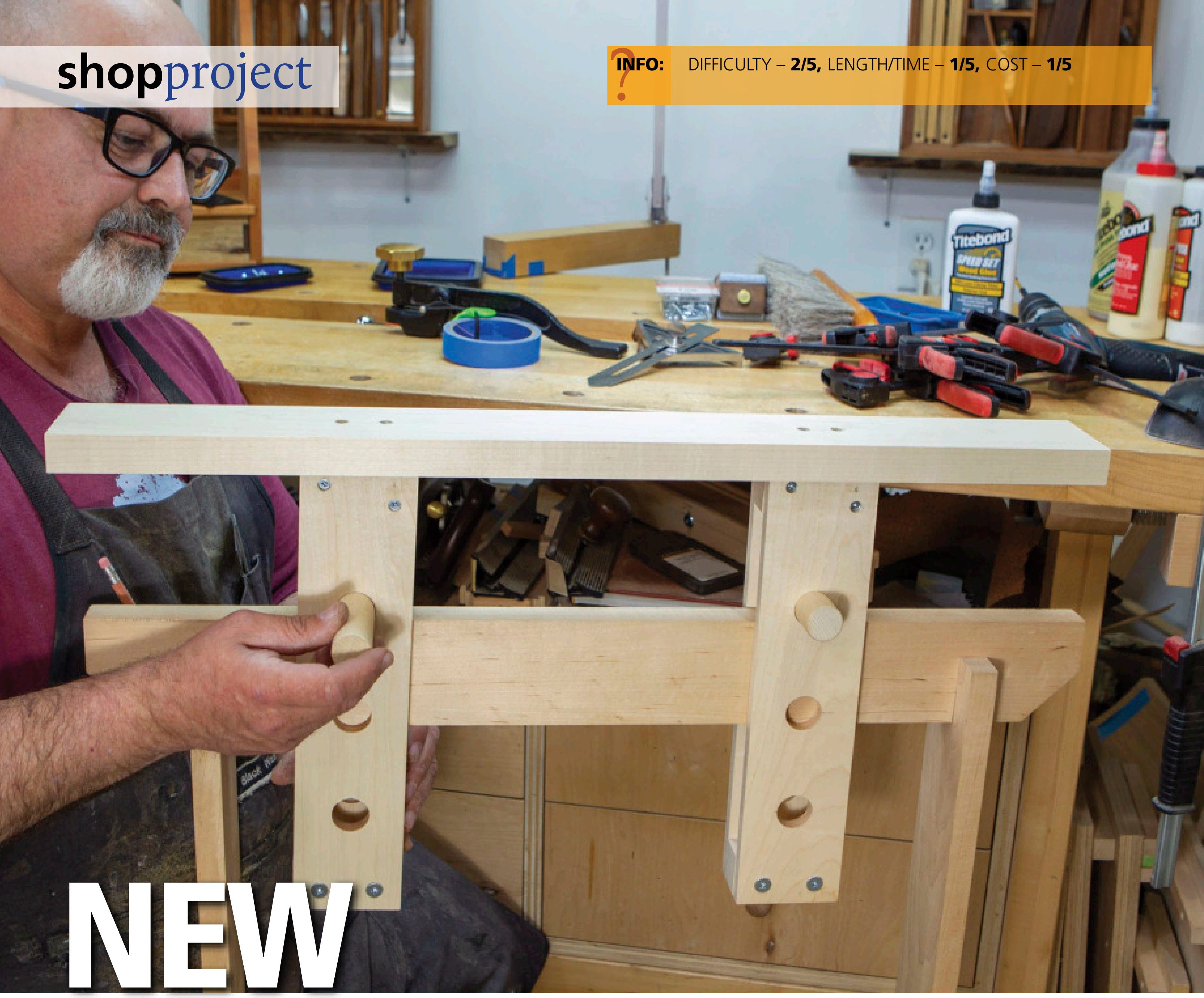
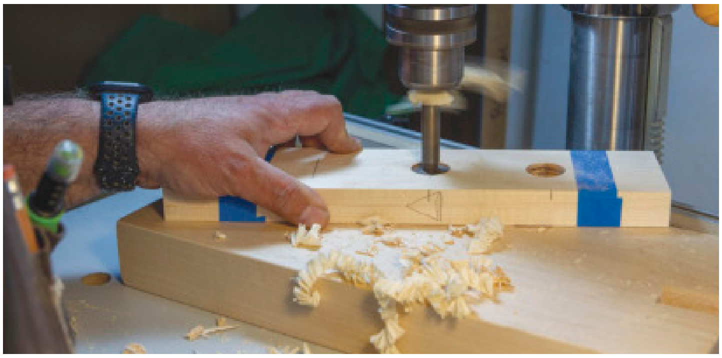
INFO: DIFFICULTY – **2/5,** LENGTH/TIME – **1/5,** COST – **1/5**



NEW HEIGHTS FOR AN OLD FRIEND

The only thing more dependable than a shop-made sawhorse is an adjustable one.

Photos by Steven Der-Garabedian



Mating Pairs – Der-Garabedian tapes the mating pairs together and drills them so they're exactly the same. Notice the cabinetmaker's triangle to help him keep track of them until assembly.

BY STEVEN DER-GARABEDIAN

One of the first projects I built during my formal education at Rosewood Studio in Perth, Ontario, was a pair of Krenov-style sawhorses. While I'm happy with their height for most projects in my shop, there are a few times I wish they had a bit more reach, height-wise.

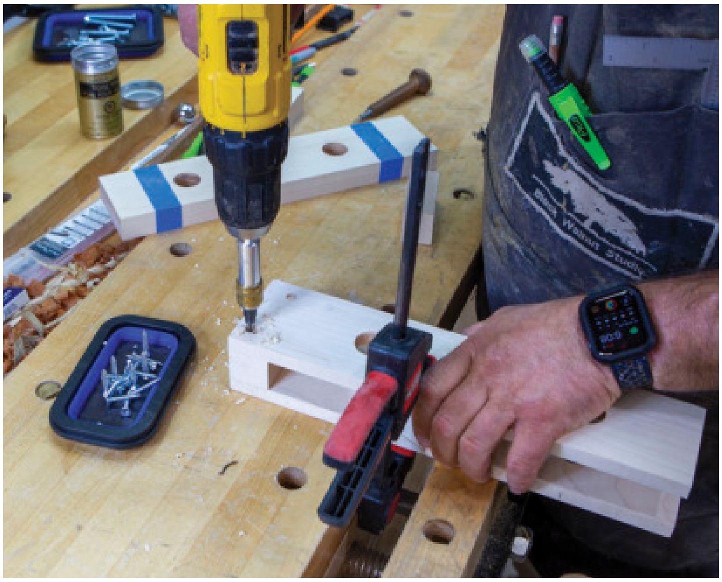
Not so long ago, as I got lost in the local Ikea labyrinth, I noticed one of the bases for a utility table had a smart adjustable height system. Time to see if I could use the idea to make my silent partners even more useful.

Good Canadian maple

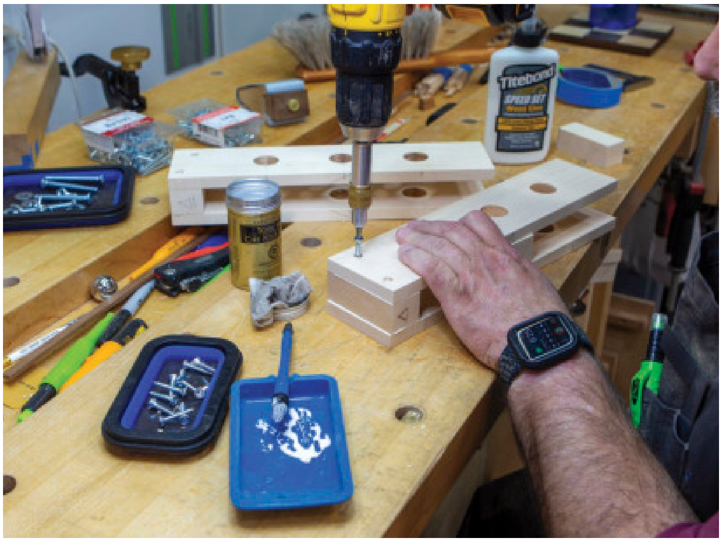
I milled up some hard maple and got to work. Each adjustable riser needs a top, four rails, four spacers and a pair of pegs. In keeping with the original design, all pieces are 3" wide. The top is 1" thick and 27" long. The side rails are slimmed down to 1/2" and are 12" long. Since the spacers allow the assembly to straddle the sawhorse, we need these to be 1" thick, however I milled mine at 1-1/16" to give a bit more wiggle room. If you only have 1" stock then a couple of pieces of veneer will work in a pinch. These are 1-1/4" wide.

Getting to work

In order to keep the peg holes lined up, I drilled the rails in mating pairs. Make sure to mark all pieces with a cabinetmaker's triangle. Tape the pairs together, then mark a centre line. I drilled



Drill Holes First – With two rail and spacer combinations clamped together evenly, drill the pilot holes and countersinks in one end of each assembly. Use the spacer for the other end in the middle of the assembly to keep the rails parallel with each other while drilling.



Drive in Screws – With the pilot holes and countersinks complete, apply a bit of glue to the joint and drive home the screws in one end.

Materials List

Part	Qty	T	W	L	Material
Top	1	1	3	27	Maple
Rails	4	1/2	3	12	Maple
Spacers	4	1-1/16	1-1/4	3	Maple
Pegs	2	1	1	4-1/4	Maple

Hardware List

Name	Qty	Size	Details	Supplier
Machine Bolts	4	1/4 - 20	Flathead	Misc
Washers	4	1/4		Misc
Wing Nuts	4	1/4 - 20		Misc

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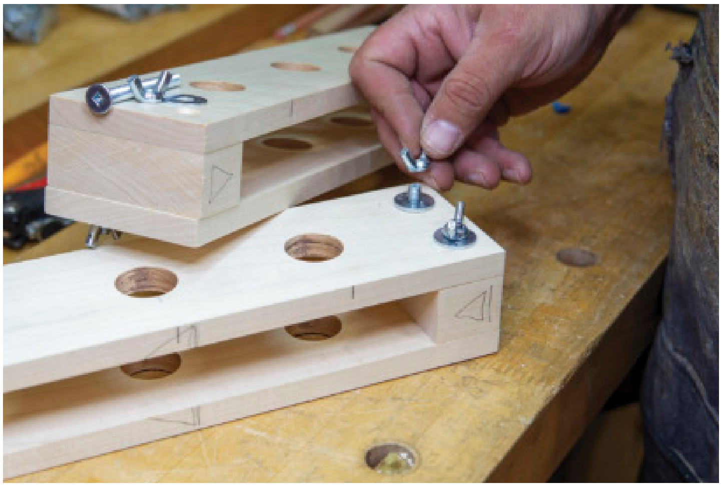

Bolt Clearance Holes – Through clearance holes are bored in the other end so bolts can be installed. The wing nuts and bolts can be removed to install the rail assemblies when they're needed.

my holes from the top at 3-3/4", 6-3/4" and 9-3/4", although the last holes are just for continuity rather than usability in my design. Drill these holes with a 1" forstner bit to accommodate the 1" dowels that will be used for pegs.

Next, pre-drill the top spacers to the rails, then apply glue and drive in a pair of #8 × 1" flathead screws from both sides. Offset each side so the screws don't hit each other if you countersink them a bit too deep. Use the bottom spacer to keep the rails parallel.

After letting the glue cure a short time, drill countersunk holes for the 2-1/2" flathead 1/4"-20 machine bolts. Lock these in with a washer and wing nut. Repeat for the other rail assembly.

Lining it up

It took a bit of head scratching to find the best method to attach the top to the rail assemblies. I started off making a mark 6" in from both ends of the top. Next, I placed clamps so they could not shift left or right. I then measured to make sure they were centred across the width of the top and pre-drilled and countersunk for two #8 × 1-3/4" flathead screws each. I removed the top, applied glue to the tops of the rails and drove in the screws from the top. To help in seating the top back into position, I drove the screws in until their points just poked through the bottom of the top.

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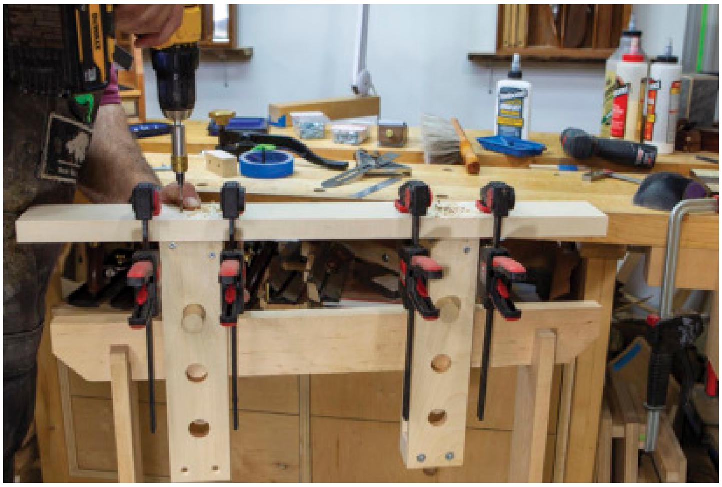
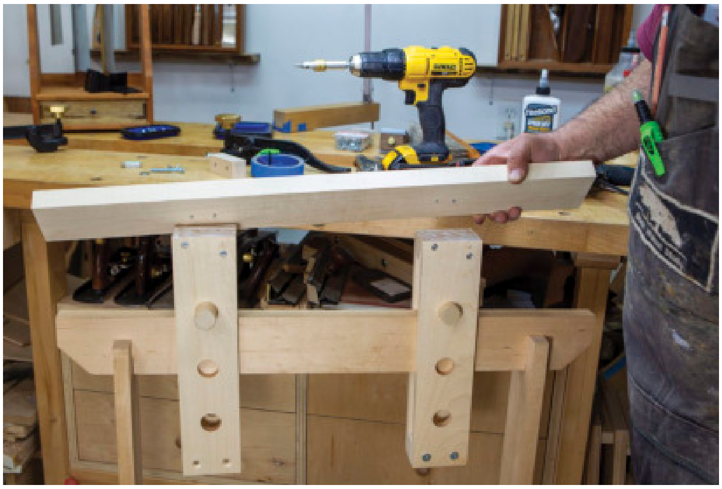


Drill the Holes – After pre-drilling, Der-Garabedian drills pilot holes through the top and into each rail assembly.



Secure the Top – Glue and screws will keep the top fixed to the two rail assemblies for good.

Ready to use

If you need a bit more height than I do, you can definitely make the rails longer (within reason) and drill more holes. One of the best features of the Krenov-style sawhorse is that all the weight is carried down the legs, into the feet and onto the ground. This new modification continues that trend. I was worried that the new assembly might roll on the dowels, but it held its position nicely when in use. You could also create a sloped top by changing peg locations. It doesn't take a lot of materials nor a long time to make. In fact, in an afternoon you could make a pair that will help you, too.

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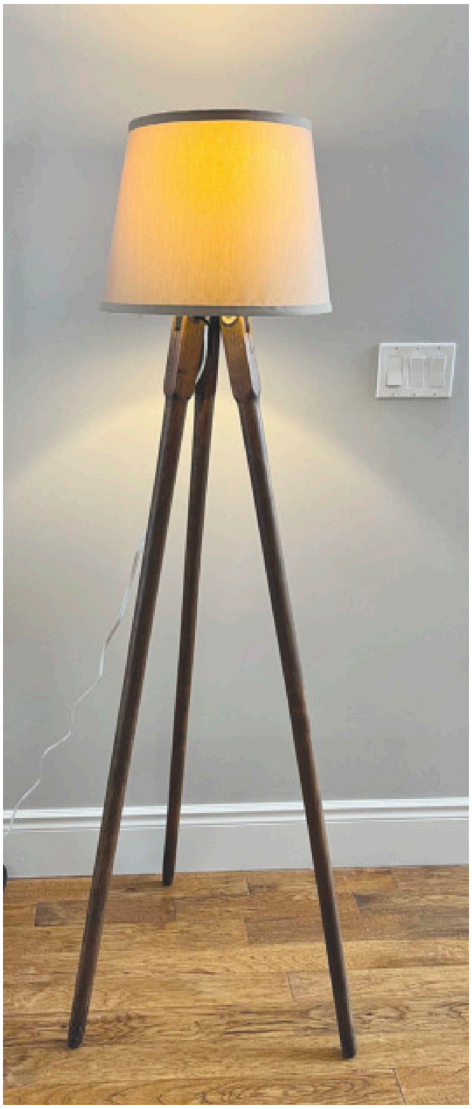
Tri-ing Out a New Idea

When I saw an old wooden surveyor stand for sale online, I knew I had to have it. I had the perfect project in mind.

BY JAMES JACKSON



I've developed a bit of a bad habit over the past few months, one that I didn't see coming. But it's not my fault, really, it's all my sister's doing – she sent me the first web link back in the fall and ever since then I've been hooked.

Facebook Marketplace is a dangerous place for someone like me who thinks they can revitalize or rejuvenate any old piece of furniture like a desk, table or bookshelf. I spend way too much time browsing the listings looking for hidden gems or diamonds in the rough. It's like the world's largest online garage sale and I'm itching to make a deal. From vintage home decor, old pickup trucks and garden sheds, to tools, antiques and house plants, the vast array of items is dizzying.

I've even managed to sell a few items through Marketplace as well, namely an old jigsaw and a circular saw. Nevertheless, my wife still doesn't think much of the online platform and worries I'll start accumulating a pile of junk and other people's unwanted items. She isn't keen on thrift stores for the same reason.

But one day in early January something unique came across my screen. I was immediately hit with a jolt of inspiration when I saw an old wooden surveyor's tripod available. It stood just under five feet tall and it was only a 15-minute drive from my house. I wanted it. No, I needed it, and I had the perfect project in mind.

I also knew from experience that sometimes you can wait and the price (this seller was asking $80) will sometimes drop. It's a risk, of course, and someone else could potentially swoop in and steal your prize. But I could see the tripod had already been up for a few weeks, so I bookmarked it and crossed my fingers.

About a week later I revisited the listing and saw it was still available, but noticed the price still hadn't changed. Not wanting to take any chances, I messaged the seller and arranged a time later that morning to pick it up at her small horse farm just outside of Fergus, Ont.

"Where did you get it?" I asked her when I arrived, noting none of the actual surveying equipment was included.

She told me she used to work at the local waste transfer station and some guy brought it in a few years ago, so she snatched it up before it went into the trash. "I was planning on making a lamp but I just never got around to it," she said.

I smiled back, explaining, "That's exactly what I'm planning on doing with it. I'll send you a picture once it's done."

She was gracious enough to accept $60 instead of the full $80 and I loaded it into my car and headed home. I immediately got to work modifying the tripod. I drilled a few holes into the brass metal bracket at the top to hold the lamp hardware in place, wired it up (while only shocking myself once) and within an hour it was done.

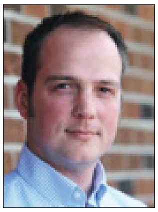
I noticed we didn't have any lightbulbs or spare lamp shades around the house, so I cannibalized some from an old lamp in the basement to complete the setup. The tripod lamp now stands prominently in our living room near the fireplace and is a perfect accent lamp for the home.

I sent a photo to my wife right away, ready to bask in her Marketplace repentance.

"Where did you get that? I like the base but not the shade, but that's an easy fix," she texted back, seemingly missing the hint that I had made it. When I told her where it came from, her entire tone changed.

"You made it?!?! It looks awesome!" she replied.

She still thinks Marketplace is a bad idea, but projects like this might be slowly changing her mind. Maybe I'll start looking for a replacement lamp shade.



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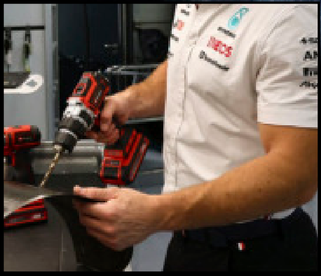

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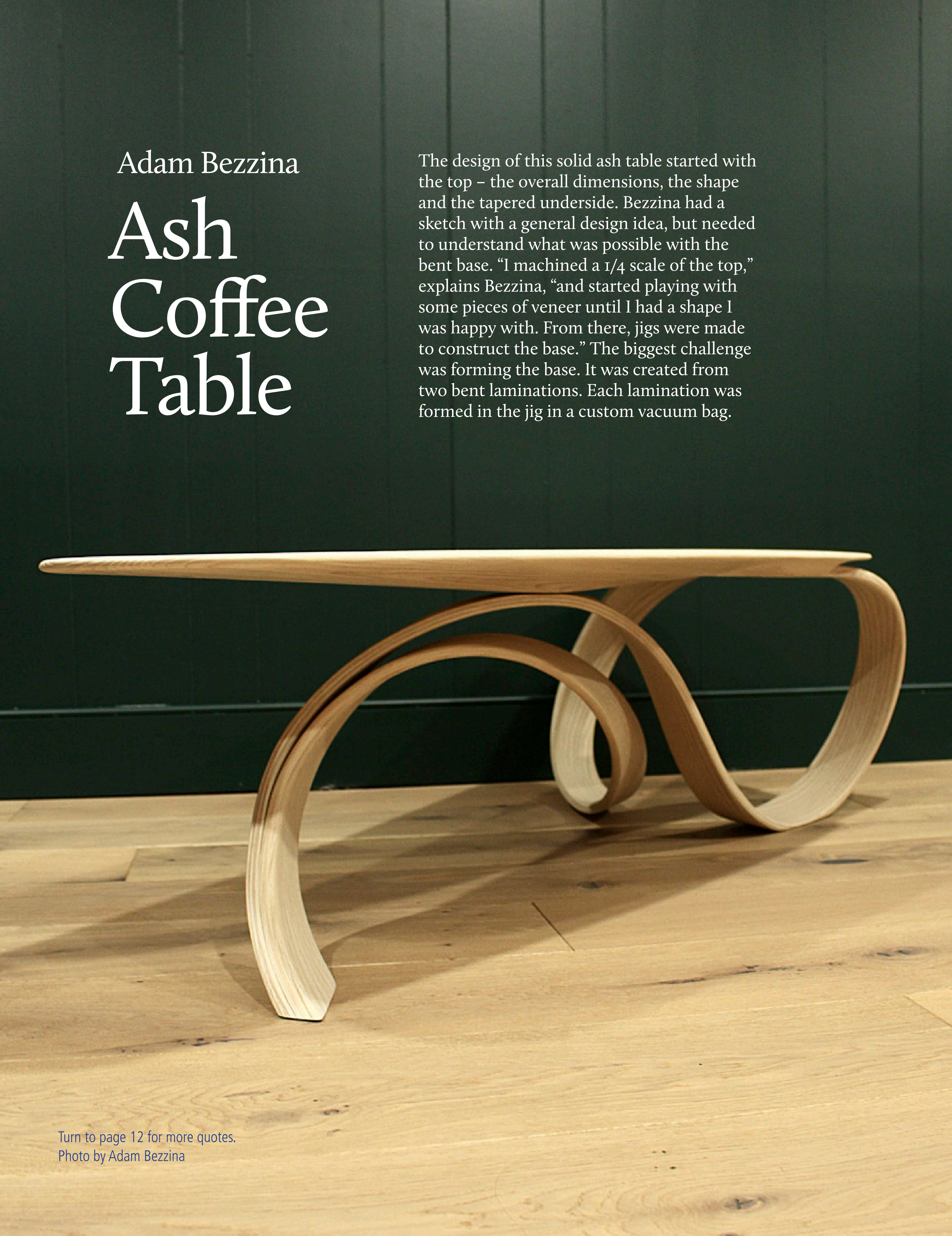
Adam Bezzina

Ash Coffee Table

The design of this solid ash table started with the top – the overall dimensions, the shape and the tapered underside. Bezzina had a sketch with a general design idea, but needed to understand what was possible with the bent base. “I machined a 1/4 scale of the top,” explains Bezzina, “and started playing with some pieces of veneer until I had a shape I was happy with. From there, jigs were made to construct the base.” The biggest challenge was forming the base. It was created from two bent laminations. Each lamination was formed in the jig in a custom vacuum bag.



Turn to page 12 for more quotes.

Photo by Adam Bezzina